

**CREATING 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED
ACADEMIC LIBRARIES IN KENYA**

BY

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DECLARATION

DECLARATION BY THE CANDIDATE:

This research is my original work and has not been presented for examination in any other University. No part of this thesis may be produced without the permission of the University or the author.

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DEDICATION

I dedicate this thesis to my sons: Eric, Ted and Egan.

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ABSTRACT

Learning space including academic library space is an important foundation for learning in the 21st century and plays a key role as universities look to address the issues of new pedagogies, changing technology and new generation of students. The purpose of this study was to assess the extent to which academic library spaces in Kenya are aligned to 21st century learning and propose a framework for their redesigning. The objectives were to: assess the status of physical learning spaces in selected academic libraries; determine students' library learning space behaviors and preferences; examine the learning support services provided in the spaces; and develop a framework to inform the designing of academic library spaces for the 21st century. Henri Lefebvre's production of space was used as the underpinning theoretical premise. Adopting an interpretivist philosophical stance, the study applied a qualitative multi-case study and collected data using interviews and direct observation. Sampling was purposive and proceeded to a point of theoretical saturation. Interviews were held with 74 students and 17 librarians drawn from four case libraries. The data collected was analyzed using thematic analysis and qualitative content analysis. The findings indicated that academic libraries in Kenya majorly provide spaces for quiet study with rules regulating space use behavior clearly spelt out and enforced. Spaces that enable collaborative learning and interaction among students are generally not provided. The library spaces are typically organized around collections with varying levels of comfort and ambience. Within the spaces, students engage in a number of academic and non-academic activities. They appreciate that there are no distractions and place a high premium on areas with a strong and stable Internet connection where they can charge their devices as they work. The services provided in the libraries are largely traditional. No formal partnerships or efforts to bring other student services into the library space were noted. Students desire a modern library that supports their changing learning needs. It was suggested that to design relevant and usable learning spaces, space planners need to cater for variety, embed technology, ensure ready access to food and drink, consider the range of student needs and expectations, factor in student and staff numbers, take care of ambience and comfort. The study concludes that academic libraries in Kenya provide spaces and space services that are basic and partly supportive of student learning needs. The spaces have outlived their originally intended purpose and as such need to be re-appropriated lest they become irrelevant. Apart from proposing a framework for the (re)designing of academic libraries, the study recommends that the libraries consider a change in collection development and management, develop a good understanding of their users' needs, re-examine library rules, redevelop services, involve users, and commence redesigning on a minimal budget. This study could influence policy at regional, national, and institutional levels.

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ABBREVIATIONS

ACRL	–	Association of College and Research Libraries
ARL	–	Association of Research Libraries
CAQDAS	–	Computer Assisted Qualitative Data Analysis Software
CUE	–	Commission for University Education
ELT	-	Experiential Learning Theory
IC	–	Information Commons
ICTs	–	Information Communication Technologies
IRB	–	Institutional Research Board
JISC	-	Joint Information Systems Committee
LC	–	Learning Commons
NACOSTI	–	National Commission of Science Technology and Innovation
NESSP	–	National Education Sector Strategic Plan
NSSE	–	National Survey for Student Engagement
PST	–	Pedagogy-Space-Technology Framework
PWD	–	Persons With Disabilities
RDM	–	Research Data Management
SCALE-UP	–	Student Centered Active Learning Environment of Undergraduate Programs
UNESCO	–	United Nations Education, Scientific and Cultural Organization

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CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter is an introduction to the study providing a brief overview of 21st century learning spaces and their value in higher education institutions, specifically their application in academic libraries. It also presents the conceptualized problem statement, research objectives, research questions, significance of the study, scope of the study, limitations of the study, and definitions of operational terms and concepts.

1.2 Background to the Study

Education in general, and higher education in particular, is fundamental to the creation and development of knowledge, economy and society in all nations. For the individual, tertiary education is assumed to be the key to societal esteem and financial success. For society, it leads to technological development, productivity and economic growth (Ozturk, 2001). Kromydas (2017) discusses these three forms of higher education: the elite form which is aimed at preparing and shaping the mind-set of students from the most dominant class; the mass form of higher education, which transmits the knowledge and skills necessary for the labor market; and the universal form which is aimed at adapting students and the larger population to social and technological changes. Kromydas (2017) explains further that owing to globalization, the delivery of higher education across the world is similar to the Western model, this is despite the glaring disparities in cultural, social-economic and writing systems.

Robinson (2013) argues that the prevailing systems of education were not designed to meet the challenges faced in the 21st century, they were designed for the 19th and 20th centuries and are in dire need of transformation. Gilman (2014) describes a series of major humanity transitions, first from Tribal to Empire, based on agriculture and industry; and on to Planetary which is characterized by digitally-based multi-media telecommunications and networks. According to Schwab (2016) the world is on the brink of a technological revolution that will significantly change how people live, work, and relate to one another. Schwab (2016) explains that the first industrial revolution mechanized production using water and steam power, the second one used electric power for mass production while the third automated production using electronics and information technology. A fourth industrial revolution is underway and building on the third, it is characterized by a blending of technologies that is making the lines between the physical, digital, and biological spheres blurred. Watson (2017) observes that these transitions in society have affected the higher education landscape such that thinking how to shift the education system becomes imperative since as noted by (Huitt, 2017) education, whether formal, non-formal or informal, has the capacity to arm people with the knowledge, attitudes, and skills needed to adapt to the present and get ready for the future.

Classrooms, libraries, student centers, university cafeterias, atriums, halls, terraces, gardens, other facilities and open spaces provided by the university on campus shape learning experiences (Anggiani & Heryanto, 2018; Deed, 2017). Scholl and Gulwadi (2015) opine that the campus as a whole, including its open spaces, must be sensed as a holistic learning space that affords learning experience that is holistic. For student

learning, the networks of well-designed and connected indoor and open spaces on campuses are an important catalyst. Anggiani and Heryanto (2018) emphasize that these facilities and infrastructure, environmental conditions and atmosphere, should not only meet the physical but also the psychological and social demands of students as they learn. These physical spaces set the stage for student engagement and academic performance by facilitating and encouraging learning fulfilled through such ways as increasing interaction; providing resources for learning; facilitating particular pedagogical methodologies; and promoting a sense of belonging to the learning community (Scholl & Gulwadi, 2015; Arndt, 2012).

Referring to North America, Europe and Australia, Radcliffe (2009) acknowledges the increasing body of knowledge and working examples of new ideas in the design of learning spaces driven by such factors as changing social patterns, generational change, advancing technology and added student-centered pedagogy. According to O'Neill (2009), the many challenges faced by higher education are primarily driven by the extensive changes in how technology is used in the learning processes and an increase in the variety of learning styles favored by students. With specific reference to classrooms, research as reported by Steelcase (2010) shows that higher education institutions experience these shared challenges: an aging infrastructure; classrooms built for lectures, not learning; classroom layout which is rigid, allowing minimal student movement; student-teacher interaction which is constrained by space and furniture; poorly integrated technology in classrooms; and insufficient or no support for collaborative learning. Pearlman (2010) agrees that the design of most classrooms still has the teacher in front of the classroom delivering knowledge within a teacher-centered approach.

A major response to demands in higher education in the 21st century has been the recognition of the need for student-centered teaching and learning environments (Jamieson, 2003; Joint Information Systems Committee [JISC], 2009; Keppell & Riddle, 2013; Scholl & Gulwadi, 2015). Learning space, whether physical or virtual, is the most important foundation for learning in the 21st century (Uduku, 2015). As universities look to address the issues of new pedagogies, changing technology and new generation of students, space plays a key role (Steelcase, 2010). For this reason, investment in the growth and re-purposing of campus infrastructure and built space is confronted by a growing interest to provide not only spaces for learning but also specialized, innovative spaces for teaching that meet the needs of present-day learners. In the last two decades, as posited by Finkelstein et al. (2016), there has emerged an approach to teaching and learning that emphasizes online, flexible and mobile learning. This has meant that today's development of formal and informal learning environments in higher education institutions is largely embedded on principles underpinning student-centric and meaningful experience.

Learner-centered approaches put the learner at the center of the teaching-learning process. They provide opportunities to learn both independently and collaboratively with the teacher at the periphery, acting as a mentor with a primary task to create a conducive learning environment. These approaches purpose to support the learning and motivational needs of all learners by emphasizing supportive classroom environments and are dependent on an understanding of both the individual learners and the teaching-learning processes (Froyd & Simpson, 2008; Moate & Cox, 2015). Learner-centric approaches are derived from social constructivism as applied to learning where it is argued that: learners

actively construct knowledge; social interactions influence this construction; and that learner motivation has a strong influence on learning outcomes. Derting and Ebert-May (2010) intimate that learner-focused approaches can lead to improved student success as compared to the more traditional teacher as knowledge provider models. Thus, the need for learning spaces that can support learner-centered teaching in a technology and information-rich 21st century environment (Adedokun et al., 2017).

Another area of emphasis in universities as pertains to learning, is how learners learn through informal means outside the classroom (Watson, 2017). Successful students tend to establish a process of learning that works for them as stated by Beatty (2016). This process has been called self-regulation or intentional learning and consists of processes that involve behavioral and environmental self-regulation. The campus environment has a variety of types and forms of facilities that can be termed as informal learning spaces. These include: libraries, cafeterias, atriums, corridors, terraces, parks and other open spaces on the campus' public rural (Anggiani & Heryanto, 2018). Informal learning spaces are defined by Harrop and Turpin (2013) as non-discipline places frequented by students and staff for self-directed learning activities. They are used for learning and social activities (Painter et al., 2013). They are spaces purposively designed to encourage students to spontaneously engage in both independent and peer learning (Keppell & Riddle, 2012). McDaniel (2014) describes the spaces as less structured, socially-oriented spaces for students to explore individual or group learning activities. Flexibility is an essential characteristic of these spaces as it allows students to reconfigure them to accommodate individual preferences. McDaniel (2014) further states that students are attracted to the comfortable furniture, variety of table sizes, basic kitchen amenities or

access to food and drink, and the more casual atmosphere found in informal learning spaces. These spaces can be within or outside the library spaces. Students identify, locate and use these spaces for their learning and recreational activities. Anggiani & Heryanto (2018) suggest that the choice of a learning space is based on the availability of learning materials and supporting facilities, location, characteristics of space and place, atmosphere and comfort among other factors related to learning objectives. Hunter and Cox (2014) investigated students' use of three informal learning spaces at the University of Sheffield and reported that the choice of study location was largely influenced by the background atmosphere and that students modified their study habits to fit the learning spaces chosen. Further, learning together is the hallmark of informal learning spaces, students consider them as places to discuss work without being confined to regulations. Other factors such as ambience, opportunities to socialize, convenience, comfort, friendliness, personal space availability, and working alongside others have been identified as the main reasons for choosing and using informal learning spaces (Waxman et al., 2007; Cox, 2011; Cox, 2018).

Customarily, libraries have been places of learning and in the campus environment they are considered places where informal learning takes place. According to Saharkhiz et al. (2017), universities started to establish libraries upon the invention of printing. For a long time, they acted only as repositories to store books and had a minor role. Today, academic libraries are considered an indispensable tool in teaching, learning and research whose main objective is to contribute actively in the implementation of higher education goals. Freeman (2005) views them as an extension of the classroom that should embody new pedagogies. They are charged with the responsibility of providing collections,

resources, and services sufficient to support the institution's educational and public service programs. Academic libraries are, therefore, regarded as central, important and essential components of universities across the world. To emphasize the undisputable and indispensable role of the library in higher education, Edwards (2000) states that the architectural quality and physical structure of the library is a reflection of how the university understands itself as an institution of higher education. The library's quality and allocation of physical space can provide an assessment of the university's priorities and values.

An academic library should be a dynamic tool for student learning. Ideally, components of an efficient library should be aligned to the university's objectives with such elements as users, library staff and resources forming its key performance indicators (Saharkhiz et al., 2017). This means that transformative changes in culture, technology, publishing, research, and pedagogy require equally transformative changes in libraries. This is witnessed in the history of academic libraries which Weiner (2005) describes as one of evolution and change mirroring the history of parent institutions. The academic library has been changing, Seal (2015) describes the library of the mid to late twentieth century, as a 'quiet but sterile' place focused on acquiring, processing and storing collections as well as facilitating serious scholarly work. For graduate students and some faculty members it was a place for quiet study, but for undergraduates, a place to avoid. Towards the end of the 20th century, when electronic journals and the Internet appeared, there was fear that the physical library would disappear. Many believed that digital information would gradually replace books and lead to libraries being deserted (Seal, 2015; Demas, 2005). More than twenty years now into the 21st century, the academic library has

refashioned itself and is still standing in the university, in as much as this refashioning, according to Bonnand and Donahuea (2010) was in response to the fear or crisis, it marked the beginning of the “libraries space movement”.

In the 21st century, while library’s role remains information-oriented, the digitization of content and the pervasiveness of the Internet has brought about a lot of change. Change has been experienced in almost all facets of the academic library and continues to be eminent. The shift from traditional print to digital technologies according to Warwick (2014) has had impacts on the structure and role of academic libraries. The libraries have to rethink how educational materials are stored and accessed by students; and what should replace the print collections and student work spaces. Another impact alludes to the effect technology has had on learning styles. Learning styles affect learning, teaching and assessment strategies which in turn influence information provision and usage by both students and academic staff.

As information becomes more accessible online, libraries are reinventing themselves; they are increasingly less about housing publications and more about connecting learners and constructing knowledge. Watson (2017) proposes a move of emphasis from support through library instruction to assisting the construction of concepts, knowledge and understanding to support deep learning. Watson (2017) agrees with the argument of Dempsey (2010) that the outside-in library that engages in the collection of resources for users to use, is something of the past. Instead, it should transform to an inside-out library that empowers users to become producers within the library with their products reaching beyond the library. Watson (2017) is emphatic that as libraries revise their view of

learners as information consumers to one of creators and producers of knowledge, it is important to rethink library learning spaces. According to Barbakoff (2017) more than ever, users desire a place for quiet contemplation, active collaboration, interaction and community building. More and more, libraries are supporting learning that is social, emotional and intellectual. Librarians are having to carve out space for people. While doing this, they wish to strike a balance between collections and connections, a situation where collections and learning activities are partners in creating useful learning environments and not rivals. Audunson and Aabø (2013) posit that stimulating processes related to learning, knowledge sharing, knowledge creation and cultural experiences is the mission of librarianship. Thus, creating and maintaining spaces where these processes can evolve is an integral part of librarianship.

This change in focus has affected how library space is designed and planned; an evolution has gradually occurred, ranging from furnishings and architecture to culture and purpose. Bennett (2009) traces three paradigms in the design of library space. The first is a reader-centered paradigm in which books were rare and dear, the space was mainly designed for readers, informed by the monastic scriptorium and library where space was largely a reading “lectern or carrel for the monk” (p.182). Latimer (2011) explains that in this period readers still had their individual cloisters, just like monks of earlier times. Since the collections were small, immediate access was possible. The only concern was the security of the books since they were scarce leading to chained libraries and closed access stacks. The second paradigm according to Bennett (2009) is a book-centered paradigm, which emerged to accommodate “large and growing collections” (p.185), resulting from the explosion of paper-based publications witnessed in the 19th

century. Here book space was dominant and Latimer (2011) states that libraries became more open and no longer a preserve of the privileged few. The spaces were designated as reading rooms, service areas, and book stacks, with a good amount of materials still under controlled access. The third paradigm as told by Bennett (2009), was an information technology and end of the book-centered model which was marked by the move of books to virtual spaces and poses the question of how long the book-centered approach will perpetuate into the twenty-first century. Latimer (2011) reports that at the turn of the century, the end of the physical library as a building type was predicted. Academic libraries in particular, were expected to dwindle in importance and soon become redundant spaces. Bennett (2009) notes that the shift of collection growth from physical space and into virtual space, essentially brought into focus the possibility of a new paradigm for library space planning. Citing a 2002 survey, Bennett further notes that while the need to accommodate collection growth was the single most frequent motivator for new library space, the changing character of space needed for student study was ranked second. This makes learning the focus or motivator of the new library planning paradigm. Latimer (2011) opines that the library continues to be important as a cultural and social symbol, a place for interaction and a celebration of learning. Library spaces are no longer defined by shelving, they purpose to encourage interaction between and among library users. ICTs are freeing librarians from routine tasks and driving a move towards a user-centric approach to both services and space designs. Library spaces are now governed by the needs of users and as explained by Bennett (2009), in an information-rich space, the designing is no longer about the interaction of readers and books but more about the link between space and learning.

As early as 2006, academic libraries are reported to have realized the need to provide a sense of community within and beyond their collections such that renovation projects at the time, were driven by the desire to have students return to the physical library through the provision of a more appealing, comfortable and relaxed environment (Gust & Haka, 2006). The creation of exciting library space where users' needs take precedence, has been shown to cause people to visit the physical library (Latimer, 2011). Haapanen et al. (2015) opine that libraries are becoming true learning centers, providing more space for users and less for shelves. Watkins and Kuglitsch (2015) describe the 21st-century academic library as a connective space that inspires and informs, as one that plays a key role in students' intentional and informal learning. Felix (2011) observes that the constructivist learning model has evolved from work mostly applied in formal learning settings such as classrooms and is being practiced in informal learning environments like the library. Oliveira (2016) agrees that libraries are embracing the constructivist model and are creating a conducive environment that stimulates collaborative social learning, encourages creativity and supports knowledge creation.

The evolution in academic library spaces that has been experienced in the recent past, has been in an effort to meet both user and institutional needs (Karasic, 2016). The nature of these needs is influenced by such factors as the development of ICTs and the resulting increase in digitized and networked information. Warwick (2014) posits that ICTs have had an impact on how information materials are stored and accessed by students as well as on how students learn. Second, as explained by Donkai et al. (2011) is the big number of students on campus who are digital natives, as they have grown up with digital technology. This generation of students, has a distinctive learning style, they prefer visual

communications and learn better through discovery. This requires active and collaborative spaces that are technology-rich. Third is the emergence of a constructivist learning paradigm from which learning is conceived as active and collaborative and through which knowledge is constructed by engagement with information. Sawers et al. (2016) posit that this causes the demand for learning spaces that support group work and team-based projects, spaces that encourage active and participatory learning. Consequently, the academic library's focus on developing accommodation space for print and physical collections has been diminishing, librarians aspire to create a place that encourages participatory learning and allows co-construction of knowledge from a variety of sources. Choy and Goh (2016) as well as Holland (2015) report that library spaces have gradually been redesigned and repurposed to be student study, work spaces and learning hubs with books and other physical materials pushed to the sides or moved out of the library building.

Bennett (2007) encouraged librarians to think about library space as 'learning space' and no longer as 'library service space'. Libraries are fundamentally about people (Demas, 2005) and putting the learner at the center of academic library space planning according to Bennett (2009) is a return to the first paradigm in the design of library space, only that information is now overflowing and more online. On campus, these spaces that Karasic (2016) refers to as collaborative learning spaces emphasize the academic library's assertion as the center of intellectual and cultural enterprise. They are in themselves a response to users' changing needs; the campus community finds them convenient, comfortable, flexible and productive in meeting academic needs. They amplify the

academic library's learning mission and embed the library's contribution to both campus wellness and research.

Various publications (Adedokun et al., 2017; Ellis & Goodyear, 2016; Boys, 2011) on higher education affirm and recognize the need to create and redesign educational environments that address the needs and expectations of today's learners. In response to this growing need and demand for spaces that are more conducive to learning and the desire to make a more visible impact on student learning, academic libraries in developed countries have successfully redesigned and repurposed their spaces to suit campus needs in the 21st century. Oliveira (2016) in his analysis of literature, observes that library learning spaces such as non-traditional facilities like cafés and classrooms, informal spontaneous spaces, social learning spaces, computer stations, group and individual study areas, communal, flexible, collaborative, as well as areas of solitude and quietness, are now found in academic libraries. Indeed, the library has shifted from a place where reading and book storage takes place to a venue for active learning and continues to support student activity (Steelcase, 2010); it has become a center of learning and collaboration (Hisle, 2005); the information commons has managed to bring students into the library (Lippincott, 2006). Libraries which have re-developed their physical spaces are reported to have experienced a continuous increase in usage of the physical facility upon project completion (Shill & Toner, 2004; Abbasi et al., 2013).

Existing research and post-occupancy assessment studies of new and re imagined libraries provide important insights into the characteristics of 21st century academic library learning spaces. Spencer and Watstein (2017) posit that today's physical learning

spaces are formal and informal, social spaces and information spaces. They emphasize that these spaces accommodate a variety of activities, technologies, and participants. In a reconfigurable space, people need to be able to create, retrieve, combine, display and share information. These spaces are supported by staff who anticipate and meet user needs. According to Cunningham and Tabur (2012), a fitting library space should meet a hierarchy of needs made up of layers of access and linkages; uses and activities; sociability; as well as comfort and image. Choy and Goh (2016) also propose four types of spaces: sanctuary spaces, interactions spaces, community spaces, and collaborative spaces. Beard and Dale (2010) in support of learning spaces that are flexible and responsive to the evolving needs of users propose five zones: “short stay individual information gathering; open-space flexible group work; individual silent study; small-group intentional collaborative work; and structured teaching and learning” (p.480). Clearly, the variety of information needs dictates variety in learning space features. Watson (2017) asserts that an assortment of spaces that acknowledge personal difference, conversational learning and emotional factors, demands new ways to what is afforded in academic libraries and how it is served. Collaboration, flexibility, accessibility and sociability are the recurring keywords in literature and should be the guiding principles in the designing of today’s library spaces.

An assessment of literature on what libraries in developing countries are doing about their spaces to make them 21st century learning compliant does not yield much. Recent studies on the continent have concerned themselves, majorly, with the uptake of technology and web 2.0 tools in academic libraries. There is some evidence, most of it from South Africa, of repurposing and redesigning of academic library spaces. In 2008, a

“Research Commons” opened at the main library of South Africa’s University of Cape Town in addition to the highly successful “Knowledge Commons” which the library had been running since 2001 (Daniels et al. 2010). Henning (2015) reports Unisa Libraries’ renovation that is based on a “knowledge generation and creation model”. The University of Pretoria opened a “Makerspace” in 2015 and describes it as a kind of laboratory permitting people with great ideas to come together with those with the technical ability to materialize these ideas. The University of Nigeria, Nsukka, also has what can be termed a “mobile makerspace” that is run by the Centre for Technical Vocational Education, Training and Research. It is described as a “school on a wheel” designed to provide practical skills for prevocational and vocational subjects in partnership with schools and colleges (Okpala, 2016: p.575). Writing about the need of reinvention of academic libraries in Kenya, Makori (2009) argues that there has been an increased professional discussion around the end of the library as a physical place and goes on to emphasize the need for academic libraries to work towards meeting the unique needs of the millennial generation by establishing and developing relationships, and improving the physical facility by creating group study space and incorporating technology. Kenyan universities are affected by changes in higher education and advances in technology. Learners in these universities have not been left behind, they are millennials or net gens in every respect. It would be important to know if library spaces created before the advent of ICTs or those being established in the technology era, are 21st century learning compliant. Strategies being used in Kenyan academic libraries to meet space needs of the new generation on campus, in a digital age are yet to be documented. As we get deeper into the 21st century, it becomes imperative that academic librarians concern themselves

with how to re-align and redefine their space services and affordances in support of new learning styles, new pedagogy and changing technology.

1.3 Statement of the Problem

From the foregoing, it is clear that the biggest challenge facing the academic library in this century is staying relevant to its users. Among the key areas of academic library service in need of redefinition is the library space. Libraries are acquiring more and more of electronic collections and less of traditional print texts. Apart from freeing-up space, this shift means that students do not need to visit the library to access information materials needed for course work and assignments. Also, the didactic teaching approach which is giving way to more student-centered approaches has put pressure on academic libraries to offer a variety of spaces for independent research, information access, team work, discussion, and collaboration (Abbasi et al., 2013). The library is gradually moving away from being an information resources provider to a facilitator in the business of knowledge creation (Lankes, 2011; Choy & Goh, 2016).

To achieve its user-centric mission, the academic library must, therefore, pay attention to how the physical space is designed, organized and used. Many libraries and librarians are grappling with questions that revolve around how to make the best use of their spaces; how to attract students to the library as a place, ensuring that it remains relevant in this era of diminishing print collections; how to continuously transform the library in an incredibly competitive and ever-changing higher education sector. Transforming the conventional model of book storage into a vibrant learning center, according to Head (2016) is the concern of nearly every campus library. Abbasi et al. (2013) argue that

while the traditional roles of academic libraries abound, a new generation of academic libraries which emphasize the learner and learning is emerging. This emerging model as explained by Oliveira (2017), requires spaces that support the emerging pedagogical practices like blended learning, flipped classrooms, experiential and collaborative learning, where students are empowered to become independent learners and knowledge creators.

Apart from pedagogy which is undergoing revolution, in many institutions of higher education, students are immensely diverse and changing fast and substantially. As a group, they vary greatly in terms of age, ethnicity, experiences, and preferences for face-to-face versus distance education (Head, 2016). In such a landscape, that is not only complex but also on constant move, the role of academic libraries may not be fully understood. This variety of needs must be considered and prioritized according to the environment and circumstances of individual institutions. An understanding of student needs, behaviors and preferences then becomes a defining factor in coming up with relevant learning spaces. Ellison (2016) and Kehrwald et al. (2013) suggest that to cater for the new ways of learning, the design of relevant learning spaces will have to be led by an analysis of how teaching and learning happen.

Available literature on academic library space redesign projects, their considerations and successes is mostly from North America, Europe, Asia and in the case of Africa reports are mainly from South Africa. Despite the fact that this literature provides elaborate information on redesigning for the 21st century, contextual differences may not allow application in Kenyan academic libraries, and it was, therefore, important to find out

what is happening locally. A literature search on learning spaces in academic libraries in Kenya yielded no results. Other related terms like ‘Information Commons’ and ‘Learning Commons’ were also not found to be used in existing literature on academic libraries in Kenya. Musangi et al. (2019) explored the Information Commons as a service model in university libraries in Kenya and found that while librarians are familiar with the concept, no university has put in place an Information Commons, only aspects of the model exist and in a fragmented form.

The findings of Musangi et al. (2019) on the implementation of the Information Commons as a service model in Kenyan academic libraries reveal that these libraries are yet to embrace the idea of learning spaces which is two steps ahead of the Information Commons. In the developed world, learning spaces in academic libraries are being transformed to align with the changing needs of learners, Seal (2015) observes that the Information Commons has revived the library and drawn in users. Musangiet al. (2019) agree that the commons notion is a plausible solution for those academic libraries seeking to stay relevant to their users. Clearly, the need to find out the extent to which learning spaces in academic libraries in Kenya are 21st century learning compliant was compelling. Proposing a contextualized framework for the design of 21st century learning spaces is an important and necessary step in ensuring that academic libraries in Kenya are not left behind in the move towards the learner-centered paradigm and relevancy.

1.4 Aim of the Study

The purpose of this study was to assess the extent to which academic library spaces in Kenya are aligned towards 21st century learning and propose a framework for their redesigning.

1.5 Research Objectives

The objectives for this study were to:

1. Assess the status of physical learning spaces in selected academic libraries in Kenya
2. Determine students' library learning space behaviors and preferences
3. Examine the learning support services provided in library learning spaces
4. Develop a framework to inform the designing or re-designing of academic library learning spaces for the 21st century.

1.6 Research Questions

To achieve the above research objectives, the following research questions guided the study:

1. What types of space and space features are found in academic libraries in Kenya?
2. Which spaces in the academic library are preferred and why?
3. What activities are students engaged in while in these spaces?
4. Are there services tailored to support learning in the learning spaces?
5. What considerations are necessary when planning modern learning spaces in academic libraries?
6. What are the characteristics of an ideal library learning space?

1.7 Assumptions of the Study

The researcher made the following assumptions:\The shift from collection-centric to user-centric library service will accelerate as technology uptake increases and learning will become the central theme in academic libraries;

- i. The learning and teaching styles in higher education will continue to shift putting pressure on libraries to continuously reinvent themselves;
- ii. The needs and demands of academic library users will continuously change occasioning the need for flexibility in library space designs;
- iii. Physical library use will continue to decline as electronic use ascends. Well-designed library spaces and space services will be counted on to return users to the physical library.

1.8 Significance of the Study

In the face of a shifting higher education landscape, academic libraries need to demonstrate their value or contribution to core university priorities. It is expected that libraries pay continuous attention to the currency and relevance of service provided, equipment, space and furnishings. This can be done successfully, if libraries have a clear understanding of not only the environment in which they operate but also the clients they exist to serve.

It is hoped that this study will reinforce the changing landscape of human centered design. Since the 1970s a user-centered design has been growing, shifting from just designing products to designing for people's purposes. Sanders (2002) describes a user-centered space as one where relationships between people are valued and human experience is of utmost importance. 21st century learning spaces put the learner and the learning experience at the center of the design. Space in higher education institutions has often been examined either in the context of space planning that is aimed at providing sufficient amounts of space for defined uses, or as part of campus planning and building

design. It is assumed that the findings of this study and the resulting learning space design framework will cause the designing of library spaces in Kenya to shift focus from the collections towards the learner.

Few studies in the African context have sought to examine the current status of library spaces and how they align to the learning needs and styles of students. Most studies on students' behaviors, needs and preferences revolve around collection use and technology. Libraries sometimes make assumptions about what users want from library spaces, but what users really want might be completely different (Foster & Gibbons, 2007). Information from such a study means that librarians do not have to guess or assume what students need or desire in terms space provisions. Findings on student behaviors, preferences, their needs and the variety thereof will likely provide a student-centered view of ideal learning spaces and make it possible to recreate and implement spaces that students find suitable and therefore, useful, now and in the future.

The usefulness of the spaces provided is largely hinged on the harmony between these spaces and the teaching and learning styles faculty and students engage in today. This study was premised on a recognition that learning space and pedagogical practice have a relational and interdependent relationship, which means that the two elements, space and practice, influence each other in a reciprocal manner (Boys, 2011). Lefebvre (1991) in his theory of Production of Space explains that space has both a social and material dimension. That space is not a container but a social construct that is continuously produced by human activity and has an effect on human action. This relational understanding of space renders the traditional view of libraries as immobile, rigid and

obsolete as Schroer (2019) argues that a relational space model provides for space that is dynamic, enabling and changeable. It is hoped that the findings of this study bring into focus this relationship especially with regard to the need to continually refresh learning spaces. Librarians in Kenya are likely to be more aware of the fact that culture creates space and start being more intentional about what they create.

Findings of this study also contribute to the existing literature on the development of library spaces in the 21st century especially in Africa. Specifically, academic libraries in Kenya are likely to use the findings, set in the African, Kenyan context, to gauge how suitable their spaces are for 21st century learning. The findings will serve to remind academic library administrators that while digitization, library security and cloud deployment efforts are valid, attention needs to be paid to the quality and suitability of the library space. It is hoped that the findings of this study will help national education designers and university planners to visualize the relationship between students, informal learning spaces, and student success; make a good case for repurposing of learning spaces and thus inflame the creation of compatible environments for today's learning. This will help to heighten the academic library's learning mission.

The framework that this study proposes could serve as a reference tool for university planners, university accreditors and library space planners. Planning teams -librarians, architects and university administrators, will no longer use assumptions; they can rely on the framework to develop an understanding of what should be included in a space to make sure that learning happens there. Since learning spaces must be continually revived to ensure relevancy to learners, university accreditors could use the framework to develop

a checklist that can be used when advising and assessing academic libraries. The framework will be useful especially to education planners and administrators when planning library and non-library learning spaces. This whole study was in an effort to ensure that learners and learning are always at the center of academic library service and space developments.

1.9 Scope and Limitations

This study was conducted in selected private and public universities. The researcher was cognizant of the disparities that exist between private and public universities in Kenya, data from both types of higher education institutions was meant to give a more representative view. In selecting the universities to be included in the study, the researcher looked at such factors as the age of the library buildings, the assortment of academic programs and the diversity of the student body. This study was based in libraries in these universities also referred to as academic libraries. Data was collected from these libraries, librarians working there and students using the library. Specifically, observation data was obtained from the library buildings as the researcher was keen to establish the status of library learning spaces in terms of features, provisions, and services. To gain a deeper understanding of space provisions, student practices and space preferences, interviews were conducted with librarians and student library users in the libraries studied.

It was not possible to cover many institutions owing to the detailed nature of data that was to be collected and the limited financial and time resources. Due to size and resource variations, the data and information collected may not all be perfectly applicable to other

academic libraries. Nevertheless, since academic libraries in Kenya operate in the same higher education context, they serve students from across Kenya with similar characteristics and are accredited by the same body, most of the findings should be applicable across the board.

The study limited itself to the views of students who are ‘net gens’ and ideally, the majority on campus. Even so, it is important to note that since observation was one of the data collection methods the researcher used, data on faculty and other library users like non-teaching staff in the library when data was being collected may have found its way to the study findings. The researcher focused on University Librarians of the libraries studied as key informants since they are top leaders and, therefore, have a good grasp of what is happening in their libraries. They are also charged with the initiation, planning and implementation of such big projects as library space design. Librarians in charge of user services and instruction were of interest as they are key in designing and implementing learning support services. The views of other library staff were not sought.

1.10 Definitions of Operational Terms and Concepts

Academic Library—is a library that is positioned around teaching and learning institutions (Allen & Taylor, 2017). In the context of this study an academic library is a library found in a university and charged with the responsibility of supporting teaching and learning through its resources, spaces and services.

Information Commons—Beagle (2010) describes the Information Commons as a continuum of services that can assist students to go beyond information access and retrieval, towards interpretation, processing, and manipulation, and on to the creation and

presentation of new knowledge. This study views an Information Commons as the first materialization of the commons concept and defines it as a set of best practices for improving library space and service by integrating technology and collections in support of student learning. The researcher acknowledges that the Information Commons has continued to evolve and is increasingly a place where library, technology and teaching merge to enhance the learning, research and the creation of knowledge without leaving behind the social aspects of learning.

Information Communication Technologies (ICTs) – Information Communication Technologies is a combination of Hardware, Software, Telecommunication and Internet that enable society to create, collect, consolidate and communicate information in multimedia formats to be used for various purposes. They enable the handling of information and facilitate different forms of communication. These include capturing technologies, storage technologies, processing technologies, communication technologies, and display technologies (Hamelink,1997). For the purposes of this study, Information Communication Technologies refer to technologies that are used to collect, store, edit and communicate information in various formats. In the 21st century academic library, ICTs are indispensable tools needed for the provision of value-added information service products and services in support of learning, teaching and research.

Learning Commons–According to Turner et al. (2013), the Learning Commons is an evolution from an Information Commons centered on technologies to a collaborative learning space that contains various technologies, resources, and services provided by diverse academic units. It is more engaged with teaching and learning than merely supporting learning. This study defines a Learning Commons as a student-centered space

that can accommodate various, highly flexible and technology-rich activities that can be seen as learning and also re creative. In this space, student amenities like wireless connectivity, presentation rooms, flexible furniture and aesthetics are important. In a library setting, a Learning Commons highlights the importance library space, social learning, the instructional roles of librarians and supportive roles of other academic units.

Library Learning Spaces – Turner et al. (2013) describe learning spaces in academic libraries as spaces that facilitate and support learning by fostering social interactions and knowledge exchange. While the pedagogical underpinnings in these spaces are important, the social dimension of learning and knowledge is emphasized. This study views library learning spaces as a concept that is focused on provision of varied spaces to cater for learner needs and desires that vary greatly and change frequently. These spaces provide a place where learners can contemplate, integrate, and create new ideas or knowledge. Collaboration, variety and flexibility are the guiding principles in the design of these spaces.

Learning Spaces –are a move away from the traditional classroom or library philosophy to spaces that are culturally relevant, and student-centered with designs that are flexible and the provision of supportive facilities along with technologies that spur group and collaborative learning. These spaces unfold new teaching and learning pedagogies (Akintunde, 2016). This study uses the term ‘learning spaces’ to bring together the variety of physical, technology-infused infrastructure and pedagogy as netted in the teaching and learning in the 21st century university going beyond the conventional teacher-centered lecture approach. The mission of the Learning Commons is extended by the learning spaces model by providing a variety of formal and informal, collaborative

and independent, learning spaces that promote self-directed learning. A shift that has been inspired by the notion that space impacts learning behaviors.

Net Generation - Brown (2005) describes today's student as a net generation because of the tendency to rely a lot on ICTs. The "Net Gen" students are social and team oriented, comfortable with multitasking, and generally positive in their outlook, and have a hands-on, "let's build it" approach, all encouraged by the ICT resources available to them (p.12). This study defines the net generation as those born after 1985, who have grown up with computer technology and the Internet. They are the majority on campus today and have skills, attitudes, expectations and learning styles that demand a technology-rich environment.

Twenty First Century Learning Space - In the view of Brooks (2011) the 21st-century is a place that is conducive to learning by promoting constructivism, active learning, pedagogical innovation, and increased student engagement. In this space students are able to actively engage with their own learning, reflect about their work, and learn from their peers; with the teacher being a guide and a facilitator. For this study a 21st century learning space is a reflection of an institution's educational philosophies. The space is student-centered, taking care of learning needs, styles and preferences; and enabling collaboration problem solving, and a variety of learning experiences. To provide these experiences, the space is technology infused and flexible to support the dynamics.

User Centered Design – According to Sanders (2002) a user-centered design is one where relationships between people are valued and human experience is of utmost importance. This study refers to 21st century learning spaces as user-centered for the

reason that they put the learner, the learner's needs, and the learning experience at the center of the design.

1.11 Chapter Summary

This chapter provides the background to this research, a demonstration of how the higher education landscape has changed and what libraries in these institutions are doing or need to do for continued relevance. The chapter outlines the problem by revealing gaps in literature with regard to Kenyan academic libraries space practices. Specific elements of library learning spaces especially the need for rethinking and redesigning for suitability in the 21st century are discussed. Objectives and specific research questions that were investigated by the research have been brought out. The need, relevance and value of such a study especially in Kenya has been explained under 'Significance of the Study'. The researcher has made attempts to illustrate how the findings of the study can be applied in the practice and policy on the design of library learning spaces. To establish the scope and limitations of the study, the chapter ends by explaining what and who was part of the study, what the study could not achieve and why.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theoretical framework upon which the study is premised. It also reviews the literature related to the research. The literature reviewed in this chapter focuses on academic library learning spaces, their attributes and role in supporting student learning in the 21st century. Guided by the objectives of the study, outlined in Chapter 1, the topics covered include: the changing higher education landscape with regard to technology, pedagogy, and today's student; library learning spaces, their value, evolution and current status; student learning space use, preferences and behaviors; learning support services provided in library learning spaces; and designing or redesigning library learning spaces in terms of factors to consider, approaches and guidelines. A review of existing design frameworks is also included.

2.2 Theoretical Framework

Theories arrange a set of concepts to design and explain some phenomenon. They provide both a framework for critically understanding a phenomenon and a basis for considering how what is known can be organized (Silverman, 2000). To a social scientist, theory is comprised of propositions that explain the relationship between objects, concepts, phenomena, or characteristics (Berg, 2004). It, therefore, can be seen as 'explanation or an explanatory device', a platform to launch a critique, to bring forth new perspectives to an object of interest or challenge the present (Gulson & Parkes, 2010, p.76).

Literature pertinent to informal learning spaces as analyzed by Harrop and Turpin (2013) is primarily drawn from three disciplines: learning theory, place making and architecture. Learning theory refers to an understanding of how people learn and an acknowledgement of the variety of learning preferences; place making is about people and their experiences whilst occupying a given space; and architecture refers to the tangible inside and outside of a physical space. Harrop and Turpin (2013) argue that to understand and create successful informal learning spaces, all the three and their relationship to one another must be put into consideration. This viewpoint is supported by the research of Bennett (2007) which proposes six preliminary questions that ought to be asked in the redevelopment of an informal learning space and Lefebvre (1991) whose work is underpinned by the belief that ‘form must express function’ (p. 144).

The study grew out of the ongoing changes in the higher education landscape, the generational change that has been experienced and the inevitable shift that is occurring in academic libraries owing to a number of factors among them advances in technology. Considering the need to study the suitability of academic library learning spaces for 21st century learning, especially, with regard to student learning space behaviors, preferences and experiences, this study chose the notion of space as socially produced, advocated by Lefebvre (1991), to be the underpinning theoretical premise. This theoretical perspective challenges history or time as a sole factor in understanding social relations and space, and allows such questions as: In what ways are the behaviors and attitudes of 21st century students shaped by, and help to shape, the spaces they learn in? What is the relationship between what library space affords or constrains and these behaviors and preferences?

Are library learning spaces created in the past century still relevant and supportive of teaching as well as learning in the 21st century?

2.2.1 The Production of Space (Henri Lefebvre, 1901-1991)

Henri Lefebvre (1901-1991) was a prominent and publicly-known French Marxist philosopher or theorist, who published about 72 books on different topics (Elden, 2004). One of the most important publications was the 'La production de l'espace' literally translated as 'The production of space', first published in French in 1974 and reprinted in English in 1991. Lefebvre held a humanistic Marxist perspective on spatiality and urban life, he was interested in developing a critical unitary theory that brings together the three fields of space: the physical, the mental and the social (Leckie & Given, 2010).

The theory's basic proposition is that of space as social, and as a social product. To Lefebvre, social space is not a 'collection of things or an aggregate of data' or a 'void packed like a parcel with various contents' (Lefebvre, 1991, p. 27). It is a product of human action, an argument that goes beyond the dual scheme of physical and social space, one that actually inspires sociological analysis of space where an account for both the construction of space through human activity and the impact of spatial arrangements on human action is essential (Schroer, 2019).

Lefebvre (1991) provides the following four implications of the 'space as a social product' proposition:

- Natural space will disappear and trying to save it will not help since it is always being disrupted by the mode of production.

- Every society produces its own valid space that will look and feel differently from the spaces that precede or follow it. This means that any effort to understand the space of a particular society requires an understanding of that society, its people, culture and practices.
- If space is a social product, our knowledge of it must be expected to reproduce and expound the process of production.
- The production of space necessarily involves history. That while space may not always correlate with historical events, since it is produced, it changes as the mode of production changes.

Along with these four implications and central to the theory of Production of Space (POS), Lefebvre explains his now famous conceptual triad also known as double triad or triadic spatial framework. The triad is seen as ways of understanding, thinking about and experiencing space. Lefebvre (1991) elaborates that social space has three elements including:

- i. **Spatial Practice or Perceived Space** – this is the physical space or materiality. It embodies the perceived domain or how one feels in a space, with potential reactions ranging from fear and intimidation to a sense of freedom and purposefulness. A society's spatial practice encompasses production and reproduction; it secretes that society's space in a slow but sure manner as it is mastered and appropriated by the mode of production. Spatial practice is manifest in daily routines and in how those routines are ingrained within the physical space. This space is physical, mathematical and measurable.

- ii. **Representations of Space or Conceived Space** – this is space as conceived, mentally constructed or imagined by planners, architects, urban theorists, bureaucrats, engineers, and the like. This is the dominant space under any mode of production. Dale and Burrell (2008) view conceived space as organized space, purposefully constructed to epitomize certain conceptualizations, functionality, messages, control, in a materialized form. Conceived spaces are intended to produce desired effects. Lefebvre refers to highly produced space as dominated space. In such spaces normal activity and proper behavior is defined by rules and social structures.
- iii. **Representational spaces or lived spaces** - These are the spaces of everyday experience, habitation, and imagination, where resistance to prevailing spatial practices may be evident. This is the directly lived space by inhabitants and users of a space as created through their imaginations and desires. Unlike conceived space, lived space does not depend on deciphering of codes and structures as envisioned by planners and designers, instead it is individual, perceptual, intuitive and symbolic. Its interpretation moves from the planners to the users who seek to appropriate and change it.

Lefebvre explains that a dialectical relationship exists between the triad of the perceived, the conceived and the lived spaces. The three moments of perception, conception and living are simultaneously conscious and unconscious. They all combine in a non-linear and unstable but fluid and dynamic relationship to produce space. Each element feeds on the other in a process of unending production and reproduction. They all operate at all times. According to Stanek (2011) the triad provides a springboard for understanding the

production of space as not limited to the domain of planners but taking place in everyday activities of space users.

Lefebvre maintains that cultures produce spaces and that the priorities of a given culture direct what is considered as normal activity within a space and how that space is to be managed. In the case of library learning spaces, the collective vision of library space planners, educators and librarians gives rise to structures and rules intended to harmonize with and express the spirit of learners and to achieve the goals of society. In the 21st century, such factors as the changing nature of teaching and learning, the learners themselves, the ubiquity of technology as well as the priorities of a given institution are expected to determine the creation and recreation of library learning spaces. Schroer (2019) observes that while the traditional view of space as a container emphasizes the impact of space on its users, the relational concept stresses the active role of individuals in establishing spatial structures. In other words, a relational model allows learning spaces to be viewed as dynamic, enabling and changeable.

2.2.2 Suitability of Lefebvre's Conceptual Triad for this Study

Library space is historically absolute space. Elmborg (2011) explains that similar to other culturally symbolic spaces like cathedrals and temples, libraries evolved to fill one socio-cultural function, and they are so filled with the essence of their identities that they tend to resist appropriation or reinvention. As absolute space, the library presents itself as a highly articulated, powerfully constructed and structured institution. This is what Lefebvre calls dominated space, space that leaves no room for alternative uses.

Lefebvre's development of a spatial triad suggests an approach to the study of library learning spaces that facilitates the contemplation of physical, mental and social spaces to provide an integrated view of a library learning space, an approach that contrasts with how library space was regarded and planned in the past century. His perspectives enable an exploration of library learning spaces that is rich and insightful. Specifically, the first and second aspects of the triad, perceived and conceived space, which refer to the materialized and mentally constructed space was used by this study to explore objectives 1 and 3: '*To assess the status of physical learning space in selected academic libraries in Kenya*' and '*To examine the learning support services provided in library learning spaces.*' The researcher focused on the physical learning space, its design and affordances, the messages it carries, its level of domination, possibilities of appropriation and how it is produced and reproduced by the activities of learners and librarians.

The third element of the triad, lived space, as viewed and conceptualized by Lefebvre was applied in objective 2: '*To determine students' library learning space behaviors and preferences.*' Lived space is space as experienced by the livers, in this case students and librarians. The study sought to understand the learning behaviors and preferences of students in the learning spaces. A focus on what students actually do in the spaces and why; how they inhabit and reconfigure the spaces; other uses and changes they bring to the spaces; and what they say works for them, was used to give an indication of how the provided spaces suit their needs, what change they desire and the extent to which the spaces are dominated or allow appropriation.

Regarding objective 4: ‘*To develop a framework to inform the designing or re-designing of academic library learning spaces in the 21st century*’ of this study, all the three elements of the triad were used in its achievement. Furján (2007) argues that the blurred boundaries between the built and experience of the built, help designers to become more aware of the needs of learners. Eisenbach (2008) similarly argues for the value of observing the inhabitants of spaces, to understand how space and its use are intimately connected and inform one another. The development of a sound framework was dependent on a thorough understanding of how library learning spaces are perceived, conceived and lived by students, librarians, university planners and other stakeholders. As Lefebvre (1991) suggests ‘an existing space may outlive its original purpose and the *raison d’etre* which determines its forms, functions, and structures; it may thus in a sense become vacant, and susceptible of being diverted, re-appropriated and put to a use quite different from its initial one’ (p. 167), the proposed framework presents a transformation of the traditional academic library into a 21st century library. Table 2.1, shows how the objectives of this study are mapped to aspects of the conceptual triad.

The choice of this theory is supported by the work other scholars. For example, it has been applied in the study of library spaces in higher education by Pather (2016) who used the spatial triad to illuminate how academics use the library space and how this changes as their conceptions, perceptions, and lived experiences change. Similarly, Fallin (2016) operationalized the work of Henri Lefebvre in the exploration of the concept of the academic library, based on the premise that libraries have developed beyond their traditional role as information repositories. Fall in states that outside of education, the

Lefebvre an approach has been of influence considering how space is a social product and not an absolute reality.

Table 2.1: A Map of Study Objectives and Lefebvre's Conceptual Triad

Study objective	Aspect of the Conceptual Triad	Learning space features explored
1: To assess the status of physical learning space in selected academic libraries in Kenya' and 3: To examine the learning support services provided in library learning spaces.'	Perceived space Conceived space	Design; affordances; messages carried; level of dominations; possibilities of appropriation; production and reproduction by activities of the learners.
2: To determine students' library learning space behaviors and preferences	Lived space	Experience of the learners and librarians; what they actually do; preferences; reconfiguration; what works; desired change; extent of domination or appropriation.
4: To develop a framework to inform the designing or re-designing of academic library learning spaces in the 21 st century	Perceived space Conceived space Lived space	Intimate connection between space and its use; how one informs the other.

2.3 Literature Review

Literature review compiles and evaluates the research available on a certain topic or issue. It can be used to identify what is known and unknown in a subject area, identify areas of debate or controversy and assist in the formulation of questions that need further research (Bolderstone, 2008). A good review should be comprehensive, referenced, selective, relevant, a synthesis of key terms and ideas, balanced, critical and analytical (Steward, 2004). Bolderstone (2008) categorizes literature reviews into: systematic reviews, secondary data analysis projects and introduction to a primary research topic. As an ‘introduction to a primary research topic’ literature review is used to set the scene and convince the reader that existing published work has been considered and that the new research is necessary. This is the purpose for the ensuing literature review which is written as an introduction and foundation for a research study.

2.3.1 The Changing Higher Education Landscape

Higher education has a pivotal role to play in society. Apart from contribution to the physical and mental well-being for individuals, education plays a big part in improving economic prosperity; it is about learning and transforming, about persons and communities growing and developing knowledge, skills, and efficacy. Essentially, higher education encourages enhanced resource utilization and supports sustainable development (Wood & Breyer, 2017). Socio-economically, higher education benefits nations by facilitating cohesion and economic integration. It contributes to a country’s share of skills and potential by providing a foundation for a highly productive and professional labor force. Higher education is the avenue through which a country can work towards a profound research and innovation capability so as to achieve and

maintain a level of competitive advantage within the international marketplace (Odhiambo, 2016).

The higher education environment, the increasing variety of higher educational institutions, the cultural setup, the competitive ecosystem, is changing in a rapid and disruptive manner. Metaphorically it is 'crossed with fault lines' and is more 'seismic' than ever before (Staley & Trinkle, 2011, p.1). The environment is in a state of transition that is characterized by a myriad of inter-related developments: massification, technological advances, worldwide integration, expanded proprietary higher education, and entrepreneurial initiatives on and off campus. Other indicators of this revolution include the increased freedom of learners to access, create, and re-create content, and the opportunity for learners to interact with each other outside a mediator (Wood & Breyer, 2017; Siemens & Matheos, 2010; Schuster & Finkelstein, 2006).

Universities have been in existence for over a millennium, during this period, they have undergone transformations reflected by the economic, political, cultural and social changes of the mid to the late 20th century. Indeed, they have always intersected, interacted, influenced, and been influenced by the societies in which they exist (Siemens & Matheos, 2010). A good example is what Zeleza (2016) refers to as 'the postwar boom' in higher education. Zeleza observes that before World War II, where higher education was available, it was elitist and sexist, a preserve of men from privileged backgrounds. The war and its aftermath changed this in a profound and complex manner with massification being the most immediate and far-reaching trend. Massification has since had a serious impact on the role, organization and purpose of higher education.

Societal influence on higher education is further indicated by Wiseman and Wolhuter(2013) who see the transformations in higher education as a combined product of population explosion, economic growth and economic transformation. Salmi (2000) regards the unprecedented changes in higher education as a result of the impact of globalization, knowledge-based economic growth, as well as the information and communication revolution. Owing to these factors, higher education has shifted from elite to mass higher education, and is highly democratized. Specifically, globally, state funding for higher education is being downscaled, and students and industry are having to shoulder an increasing fraction of higher education costs. Private institutions and corporate universities are becoming more prominent (Wolhuter et al., 2010). A culture of managerialism and democratization has taken root at universities, creating a new professional working environment for academics. Evaluation and accreditation mechanisms have been established and curriculum reforms have been witnessed. Additionally, the opportunities offered by the information and communication technology revolution, especially the capacity to store, transmit, access and use information have been utilized to improve methods of tuition, and to reach a larger student body (Altbach et al., 2009; Salmi, 2000).

The pervasive demand for higher education has led to increased enrolment in many countries across the world. There are more people joining university than ever before, an effort that is often driven by government policies for expanded participation and inclusion (Wood & Breyer, 2017). In the case of Africa, estimates placed postsecondary enrollments at around 150.6 million, which was a 53 percent increase between the years 2000 and 2009 (Altbach et al., 2009). More recently, according to United Nations

Scientific and Cultural Organization (UNESCO) statistics, the 2017 tertiary enrolment rate across Sub-Saharan Africa stood at just over 9%, well below the Northern Africa average of 34.05% and the global average of 37.39%. Of course, there's a great deal of variety across the region. In Senegal, tertiary enrolment stood at 11.51%. In South Africa, the equivalent figure was 22.37%, in Ghana 16.01%, Rwanda 7.37% and Kenya's enrolment stood at 11.46%, a rise from 9.23% in 2015 and 3.99% in 2009 (UNESCO Institute of Statistics, 2017).

African higher education is dominated by academic institutions shaped by colonialism and organized according to the European model. Teferra and Altabach (2004) argue that, while Africa can claim an ancient academic tradition, traditional centers of higher learning do not exist anymore. Traditionally, higher education was characterized by low levels of postsecondary progression. Today, higher education is associated with modernization and development; its role in Africa's sustainable social, political and economic development is not contestable. Consequently, and in line with the data presented above by UNESCO, virtually all African countries have experienced an increased demand for access to higher education. This has caused a strain on the resources in institutions of higher learning. Institutions originally designed for fewer students are having to take in more students and as such, more faculty are needed, additional infrastructure has had to be built while financial resources have not kept pace; a mismatch that has large-scale implications on quality (Mohamedbhai, 2011; Teferra & Altabach, 2004). African universities are, therefore, called upon to do more with less as pertains to infrastructure, teaching and research facilities as well as staff.

A number of challenges face universities today, Wood and Breyer (2017) posit that among them is the need to bolster opportunities for learning for students from non-traditional backgrounds and to sustain learners' motivation and ability to engage effectively and deeply with their learning. Academic libraries have traditionally been referred to as 'an extension of the classroom', and in the campus environment they are seen as the 'place to be' for those seeking academic success. Thus, their contribution to learning and the quality of higher education cannot be overlooked. The shifts taking place in higher education have not spared libraries. It is expected that libraries in universities accommodate change in terms of nature and number of students, application of current technologies, changing pedagogies and learning styles in their product and service provisions. This study sought to find out how academic libraries in Kenya are using their spatial spaces to keep the learner interested and committed to learning.

2.3.1.1 Changes in Higher Education in Kenya

Higher education in Kenya, just like in the rest of the world, is a key factor in the nation's efforts to create a highly skilled workforce to compete in the global economy. Formal higher education in Kenya can be traced to the early 20th century when the British colonial powers established Makerere College in Uganda to replace the traditional non-formal forms of education that were the norm in East Africa. Rising demand led to the establishment of the Royal Technical College in Nairobi in 1956, which later became the University of Nairobi in 1970. The decades that followed witnessed rising demand and continuous growth such that in 2013 the Commission of University Education (CUE) recorded that Kenya had 20 public universities with several constituent colleges and campuses (Nyangau, 2014; CUE, 2013). More recently, CUE (2022) statistics indicate

that the total of number of public and private universities stood at 53 with 12 constituent university colleges; and 12 institutions operating with letters of interim authority. Equally, enrollment has been on the rise. Charo et al. (2019) reported that the net enrollment rate in higher education institutions in Kenya increased to 7.5% (percent) in 2014 from 4 percent in 2009. Mukhwana et al. (2016) attribute this growth to the liberalisation of the sector, basic education that is free, more demand for higher education brought about by population growth, rising literacy levels and the fact that national development requires advanced skills.

This rapid expansion has not been without a good share of challenges. Jowi (2010) identifies the challenges facing the Kenyan higher education system as including: massification; overcrowding; increasing demand; insufficient/declining public funding; curricula that are not responsive to labor market needs; declining quality; lack of basic supplies and equipment for teaching and learning; crumbling insufficient infrastructure; poorly equipped/stocked libraries; and poor governance. Other challenges include political interference (Odhiambo, 2011), negative ethnicity (Kramon & Posner, 2016) as well as poor technological resources and skills (Makokha, & Mutisya 2016). The system can actually be said to be excelling on one end while in crisis on the other end. A World Bank report points to the fact that five Kenyan universities are among the top 100 African institutions and that several others are recognized as innovation hubs. To the contrary, the financial situation in Kenyan public universities is desperate. The Government of Kenya has made special and deliberate efforts to grow the higher education budgetary allocation but has not been able to keep pace. Equally, enlarged enrolment has not grown in tandem with improvements in quality. Between the years 2011 and 2018, the number of teaching

staff in universities grew by only 13 percent while student numbers rose fivefold. An increase in the number of students seems to have greatly compromised quality. Additionally, the curricula are outdated just like the teaching practices which have remained largely traditional. Access continues to be determined by economic status and remains unequal despite efforts to provide financial aid (Charo et al., 2019).

Improving access to education has been a central theme in Kenya's development plan (Odhiambo, 2016). Kenya's 'Big Four Agenda', a five-year development plan, 2018-2022, aims to enhance the country's competitiveness in line with Vision 2030. In 2018, the government formulated a five-year education plan, the National Education Sector Strategic Plan (NESSP, 2018–2022). The higher education initiatives in the plan focus on translating what students learn into labor market demands, with thematic areas around increasing access and equity; improving quality and relevance; boosting enrollment; and addressing governance and accountability (Charo et al., 2019).

It is possible that the challenges outlined above could be overcome by priorities outlined in Kenya's national education strategy. Parthasarathy (2009) explains that education at higher levels, is a process of learning rather than teaching, meaning that students have to put in more effort. To do this, they have to be provided with the facilities necessary for mastering the subject matter, techniques, skills, and habits of thinking and methods of work in their disciplines. One such facility is the library which Aliyu and Joseph (2017) describe as an integral part of a university, which exists to meet the information needs of students, staff and researchers. It is considered an important intellectual resource of an academic community, as it helps the university to fulfill its curriculum requirements, at

the same time it promote studies and research. According to Abubakar (2011), the fact that the library provides relevant, adequate and up to-date information materials makes it a place of great interest to students. Libraries within higher education in Kenya, therefore, have great opportunities and potential to contribute towards each of the stated priority areas by making sure that their services, collections and spaces foster, encourage, support and facilitate student learning. This study was focused on library learning spaces, its findings reveal the condition of the learning spaces in academic libraries in Kenya, what students use and prefer in the spaces, the learning support services provided in there, and using the data generated, the researcher proposes a framework that can guide the creation of library learning spaces that are responsive to 21st century learning needs and supportive to the mission and vision of universities and largely, the country.

2.3.1.2 Learning in the 21st Century

Learning is largely defined as the permanent change in behavior that is due to experience (Lachman, 1997). This simple functional definition of learning has been considered unsatisfactory (Ormrod, 2008). De Houwer, et al. (2013) provide a more elaborate definition of learning as the changes in behavior of an organism that are a result of regularities in the environment of that organism. Made of three components, this definition emphasizes changes in the behavior of the organism, regularity in the environment of the organism and the causal relation between the regularity of the environment and the changes in behavior of the organism. In the study of suitability of learning spaces, the organism is the student, the environment is the learning space while learning (change in behavior) is a result of the relationship between the student and the affordances of a learning space.

Traditionally, learning was predominantly a solitary, internal process whereby information was transferred from the teacher to the student during a lecture. However, contemporary pedagogies support a shift from passive learning to that of active learning (Harvey & Kenyon, 2013). In the 21st century, an educational transformation is taking place, Nyakito and Allida (2018) describe this transformation as the systemic move from traditional to a modernized and effective education system aligned to today's social, cultural, economic, educational and technological needs. A key aspect of this transformation is the variety that exists among learners, learner characteristics and learning styles. Nyakito and Allida (2018) further explain that today's students are technology savvy, they have grown up in a fast-paced digital world and the traditional lecture approach may not work for them. They recommend that a balance of the objectives of the teacher with the needs and input of the students is required in the 21st century.

2.3.1.2.1 Current Learning Paradigms

The need to align with twenty-first-century demands causes the need for education that is learning-focused, student-centered, proficiency-situated, personalized, collaborative, and delightful (Reigeluth, 2012). Student-centered learning approaches are now more pronounced and increasingly being applied in teaching and learning processes in higher education. Learning that is regarded as student-centered tends to focus on the development of a learners' autonomy which enables them to become lifelong learners and to solve problems independently (Jones, 2007). These approaches call for learning environments that prompt active student participation (Dag et al., 2019; Arends, 2012). Active learning is one such approach as it provides opportunities to maximize

student learning and to foster meaningful learning experiences. Other student-centered learning approaches include collaborative learning, social learning, experiential learning and informal learning.

2.3.1.2.1.1 Active Learning

Compared to the traditional model, in active learning, learners are responsible for the learning process; they are not passive information recipients. The main objective of active learning is learning by doing and thinking. This goes beyond listening to the lesson, to include various learning activities that require reading, writing, discussing, and actively using higher order thinking skills like analysis, synthesis and evaluation (Prince 2004; Bonwell & Eison 1991). An active learning environment is technology-enriched, interactive and convenient, enabling collaborative, active and engaging learning activities (Dag et al, 2019). Teachers design learning environments to ensure that cooperative learning, project-based learning, and problem-based learning take place. Teaching strategies in this model include discussion, role-play, self and peer assessment, brainstorming, and experimentation (Prince 2004). Notable features of the active learning approach include: students do more than passive listening; students are engaged in activities; less emphasis is placed on information transmission and more on skill development; more emphasis is placed on exploration of attitudes and values; there is increased student motivation; immediate feedback from instructors is possible; and students are involved in higher order thinking skills (Tendhar et al., 2019). The intention of the design is to stimulate interactions among students, with the instructor and with the content; the teacher's primary role is to facilitate and mediate student learning aimed ultimately at fostering construction of knowledge by students (Swanson et al., 2019). A

systematic review of active and team-based learning as reported by Odum et al. (2020) reveal significantly larger student learning gains like mastery of content, improvement in problem solving and conceptual understanding, compared to lecture-based approaches. This has increased interest and support for active learning leading to the incorporation of active learning pedagogical practices and spaces in higher education.

Learning environments developed to apply student-centered learning approaches have emerged and have been implemented in many universities. A good example is the Student-Centered Active Learning Environment for Undergraduate Programs (SCALE-UP) at North Carolina State University (NCSU) which is cooperative, hands-on, computer-enriched, interactive, and convenient for crowded classes (Beichner et al. 2007). Dag et al. (2019) report that:

SCALE-UP classes facilitate group work with a seating arrangement wherein everyone can see everyone else. Each U-shaped or round table has computer and internet access. Learning is facilitated through information sharing; students can build individual knowledge structures through collaborative work. Pedagogically, SCALE-UP classes use group activities, minimizing teacher-centered instruction, with active, cooperating students and teachers guiding students. Therefore, they are effective environments for lessons (p.43).

An assessment of SCALE-UP as reported by Beichner (2014) indicates that students in these classes achieve a better conceptual understanding as compared to their peers in the traditional lecture-based classes.

2.3.1.2.1.2 Experiential Learning

Experiential learning is another student-focused approach to learning, it combines mental, emotional, and physiological stimuli (Hansen, 2000). Its history dates back to the Eastern,

Confucian philosophy, with the aphorism (AD 551-179) ‘I hear I forget, I see I remember, I do I understand’. Kolb’s (1984) Experiential Learning Theory (ELT) asserts that learning is a process whereby knowledge is created through the transformation of experience; that knowledge results from experiences that have been grasped and transformed. In other words, to facilitate learning, the experience must not only be grasped, but be meaningful and relevant (Knapp & Benton, 2006). In support of experiential learning, Jarvis (1987) argues that it is only when we relate our own experience to a given situation that we make meaning of that situation.

Any learning process draws a lot from experience and learning best takes place when a learner is intrinsically motivated and tries to learn something on his/her own (Hansen, 2000). This means that a lot of learning especially experiential learning takes place away from the classroom, in informal environments like libraries. Beard (2008) explains that experiential learning is a sense making process that actively and reflectively engages the learner’s inner world as a whole person with the intricate outer world of the learning environment. The learning process according to Kolb and Kolb (2005) is depicted as a learning cycle encompassing four domains - experiencing, reflecting, thinking, and acting. The recurrent process is responsive to each learner, learning experience, and content learned. The learning process is not identical for all human beings, an individual’s genetic qualities, particular life experiences, and current demands of any situation determine the choice among learning modes. Kolb and Kolb (2009) affirm that learning styles, therefore, describe the individual difference in learning based on the person’s preference among learning modes resulting from collective transactions between the person and the environment.

In higher education, experiential learning emphasizes personal experience, it broadens and deepens the classroom by making it possible to observe, conceptualize, apply and experiment with knowledge that has been acquired. It provides an opportunity to transform knowledge into practical know-how (York et al., 2010). In higher education libraries, experiential learning can be achieved in the Learning Commons. The places for multimedia creation and presentation found in the learning commons have successfully remodeled the academic library into a "doing" place rather than just a reading room (York et al., 2010).

2.3.1.2.1.3 Collaborative Learning

Collaborative learning is the joint effort by students to achieve shared learning goals and is often singled out as the most important method in college teaching. It encompasses a wide variety of educational activities in which human relationships are the key to welfare, achievement, and mastery. It shifts away from the teacher-centered approach towards an emphasis on a learning environment where students teach one another with the guidance of a teacher who provides materials and ideas (Loes et al., 2018; Graetz, 2006). Collaborative learning techniques can be used for discussion, problem solving and for engaging students in writing projects. To maximize interaction and involvement, groups are usually made up of four to six members (Barkley et al., 2014). Compared to individual or competitive learning, learning collaboratively accrues a wide range of academic and social educational benefits. Outcomes such as better communication, improved group skills, increased student engagement, critical thinking skills, openness to diversity (Barkley et al., 2014; Loes et al., 2018), reflection, a developed sense of community (Mallon & Bernsten, 2015) have been linked to collaborative learning experiences.

Lecture halls promoting teacher-centered approaches to learning have existed since as early as 1079. In such a class, the lecturer is the expert who disseminates information while students are passive recipients. The lecture method enables one professor to instruct a large number of students saving time for other academia related demands and saving financial resources for the university (Odum et al., 2020). Graetz (2006) observes that while surveys indicate that the lecture method is still the most widely used instruction method by college educators, the transition from lecture to collaboration is advancing. A student-centered learning environment is encouraged and Graetz further notes that this elemental adjustment will challenge college infrastructure designers to conceive learning spaces that promote collaborative activities. Bruffee (2003) describes the ideal classroom for collaborative learning as having a level floor, movable seats, chalkboards, controlled acoustics (floors and ceilings), and no central seminar table. Rands and Gansemer-Topf (2017) studied the physical attributes of a classroom that promotes interaction among students and found that moveable chairs allowed movement, enabling students to collaborate and communicate among themselves; portable whiteboards made group work possible and sped-up assessment of understanding; and that removal of a spatial barrier between students and faculty afforded student-faculty interaction. Indeed, the collaborative learning classroom requires numerous possibilities for presenting, creating and reflecting.

These classroom-based and pedagogy-inspired models have found their way to academic libraries. Head (2016) examined the nature of academic learning that was supported by recent library projects and reported that the highest premium was placed on the creation of space for collaborative learning. Which meant having in place small meeting rooms

where students could work in teams and share ideas. In some cases, open designs were pushed further to stimulate impromptu exchanges or informal collaborations. Other manifestations of collaborative learning spaces in libraries are configurable furnishings and active learning classrooms. Head (2016) explains that the need for such spaces has increased with the instructors' preference for team-based, problem-solving assignments.

2.3.1.2.1.4 Informal Learning

Traditionally, informal learning is defined in relation to formal learning. While formal learning is structured with a set curriculum, delivered by a teacher, and aiming at gaining a credential; informal learning has no teacher, no defined curriculum or external assessment. It is regarded as self-directed, pursuing personal interests and done during one's spare time (Lai & Smith, 2018). Informal learning is the most dynamic and versatile, yet the least recognized form of learning. It is characterized by information foraging, observing, seeking help, asking questions, and by trial-and-error (Siemens, 2004). Also referred to as non-formal learning, it is often learner-driven, and encourages exploration, play and the development of skills (Malcom et al., 2003). Trinder et al. (2008) expound that informal learning results from every day social life activities that are related to education, work or the pursuit of leisure or hobbies. It may be intentional or incidental, structured or unstructured in terms of learning activities, objectives and support. Informal learning is often seen in a less positive light than formal learning, Coffield (2000) argues that it should no longer be regarded as an inferior form of learning. According to Stuckey and Arkell (2005) instead of formal and informal teaching and learning being viewed as oppositional and detached perspectives, they are

intersecting categories of learning falling along a continuum of learning opportunities. Meaning that all learning has some elements of formality and informality.

This study was concerned with the relationship between library physical spaces and learning. Since libraries are informal learning spaces, the definition adapted for informal learning hereafter is that presented by Jamieson (2009) as a course-related activity that is undertaken individually or collaboratively on campus occurring outside the classroom and not directly involving the classroom teacher. Jamieson sets forth that informal learning may include such activities as course reading, projects, assignments, group work and just what students engage in between formal classes. In a campus setting, these activities happen in the library, the student center, cafes, residence halls and other social spaces.

In summary, libraries have always been places of learning, supporting personal exploration of information and knowledge held in their collections. In universities, they support student learning since they are places of informal learning with great potential to support other forms of learning. Many behaviors for engaging with information have changed significantly, leading to questions about which characteristics of library spaces support learning (Nitecki & Simpson, 2016). There is need to understand how informal learning spaces found in libraries can remain relevant and this study examined learning spaces provided in Kenyan academic libraries with an aim to provide answers to the question of what makes successful academic library learning spaces in the 21st century.

2.3.1.3 ‘Millennials’ ‘Net Gens’ and their Learning Styles

Millennial is described as a generation born after 1980, which has grown up online using new ways of communication and learning (JISC & The British Library, 2008) and including a majority of students currently enrolled in colleges and universities. An array of titles has been assigned to this younger generation that is growing up in an internet-dominated world including generation Y, the net generation, the digital generation, or the eco boom generation (Lippincott, 2010). ‘Digital Native’ is another label for this new generation of students that Prensky (2001) described as those who have been engulfed in technology, speaking the language of technology since childhood. Rowlands et al. (2008) used the term ‘Google Generation’ for this cohort of young people with little or no memory of life before the internet.

There have been differing views about the age of this generation. Carlson (2005) used the term Net Gen or Millennials for those born between 1980 and 1994. Jones et al. (2010) chose the year 1983 as the mark for the first generation of the Net Gen. For Oblinger (2006), the Net Gen are those born in the 1980s and later. Tapscott (2008) classified those who were born between 1977 and 1997 as Net Gen (or the Millennials or Generation Y), and those who were born from 1988 to 2008 as Generation Next. Rowlands et al. (2008) used the term ‘Google Generation’ for those born after 1993. Dimock (2019) posits that generational cohorts provide researchers with a tool to analyze the change in views over time. The cohorts can provide a way to understand how different key events like technological, economic or social shifts shape people’s views of the world. Working for Pew Research Center, an organization committed to measuring public attitudes on key issues and documenting those differences, Dimock (2019) says

that the need to determine a cut-off point between millennials and the next generation became clear in 2018. This was to keep the millennial generation analytically meaningful and to start considering what might be unique about the next generational cohort. Pew Research Center, therefore, decided to use 1996 as the last birth year for millennials for its future work. This then gives us the most recent definition of millennials as those born between 1981 and 1996, the term Generation Z is used to refer to those born after 1996. Given the many definitions and terminologies provided, this study adopts the term Net Gens to refer to those born after 1985 and who are the majority on campus today undertaking either undergraduate or graduate studies. Technology especially the Internet explosion is the generation shaping consideration for this cohort.

Net Gen can be described as a generation that multitasks a lot and is in constant communication, broadcasting their activities online. They are smart but impatient, thrive on instant gratification and their mobile world that facilitates their multitasking nature (Oblinger & Oblinger, 2005; Carlson, 2005). This generation is globally, visually oriented and tends to rarely sit still. They are readers, viewers, listeners, writers and speakers who use a variety of media (Cribb & Schmidt, 2011). They prefer to study with or around friends - socializing and learning at the same time, blending formal and informal learning experiences. They use technology, digital content and social networking media extensively to keep in touch with peers and to create knowledge (Lippincott, 2012). They are unquestionably influenced by and immersed in technology (Farrell & Hurt, 2014).

Away from technology, Net Gens are defined by other characteristics. With regard to learning, they are decidedly active learners. Their hypertext mindset and ability to multitask allows for frequent activity changes, reducing the suitability of the traditional lecture method for their learning. Their short attention spans and low tolerance for boredom require an engaging learning process that provides choices and cooperative opportunities to allow them to create their own learning or meaning within courses (Wilson & Gerber, 2008; Feiertag & Berge, 2008). Studying the influence of technology on how Net Gens learn, Shaw and Fairhurst (2008) found that technology has increased the need for structured, hands-on, interactive assignments in the classroom. The findings of Nicholas (2008) also indicate that millennials are indeed highly dependent on technology for their educational needs. They consider Google and Wikipedia to be more useful tools for their assignments compared to those provided by the library. They value group work, case analysis and problem-solving approaches to learning. Price (2009) analyzed millennial learning and arrived at the 5Rs model of learning where the five Rs stand for: research-based methods, relevance, rationale, relaxed, and rapport. This model argues that millennials excel when they enjoy a rapport with their teachers and have reason to engage in research-oriented activities in a relaxed learning environment. Farrell and Hurt (2014) conclude that the appropriation of interactive technology in learning activities appeals to the millennial generation's active learning style and also aligns with the generational characteristic of technologically savvy, multi-tasking and desire for structure and attention.

2.3.1.3.1 Information Behavior of Net Gens

It is argued that the inclinations, attitudes, expectations and technological abilities of Net Gens will affect their use of libraries and information services. Rowlands et al. (2008) opine that the first port of call for information by Net Gens is the internet and a search engine, Google being the most popular, as opposed to earlier generations which used books and conventional libraries to gain knowledge. A global survey conducted for the Online Computer Library Center by De Rosa et al. (2006) gives a view of the information behavior of Net Gens. It found that:83 percent of college students use search engines to begin an information search;93 percent are satisfied with the overall search engine experience; there is an almost perfect fit of search engines in the students' lifestyle compared to libraries; and that books are the primary brand Net Gens associate with libraries.

Focusing on information literacy, Williams and Rowlands (2007) explain that increased access to technology has not improved the information literacy of Net Gens. Specifically, the speed with which they search the web shows that little time is spent evaluating sources, they have a poor understanding of their information needs and tend to use natural language as opposed to key words. They are, therefore, often confronted with long lists of search results and are not able to assess relevance. Rowlands et al. (2008) looked into how the specialist researchers of the future are likely to engage with digital resources and concluded that the impact of ICTs on the young has been magnified; that the presence of technology in their lives has not resulted in better information retrieval, information seeking or evaluation skills. Clearly, the role of information professionals as

mediators in information retrieval persists and young people learning informally in the spaces provided by academic libraries will continue to benefit from librarian support.

Regarding what this generation expects of library buildings, Net Gens want attractive buildings that are easy to use, a pleasant and relaxing space with a lot of technology. They want to ‘plug in, power up and prowl the internet’. They want high tech and high touch. They want technology integrated into their learning; they wish to customize their learning spaces by integrating mobile devices with library resources. The delivery should be seamless with voice and vision included not just words on a paper or a screen. They would like to be supported by librarians but at an individualized and personalized level (Cribb & Schimdt, 2011; Gardner & Eng, 2005). However, Black and Roberts (2006) advice against classifying students uniformly as Net Gens and stress the need to cater for variations within user groups.

2.3.1.4 Student Learning and the Learning Environment

The study of the relationship between people and their environment is well-established and dates back to 1936, when the founding social psychologist Kurt Lewin articulated the theory of “life space” which concerns itself with factors which determine the behavior of an individual at a specific instance (Spencer & Watstein, 2017). Examining the relationship between student learning styles and the institutional learning environment, Kolb and Kolb (2005) also linked the concept of learning space to Kurt Lewin’s theory of life space explaining that for Lewin, both the person and the environment are interdependent variables, where behavior is a function of person and environment.

Further, the relationship between people and the environment can be explained using the situated learning theory which perceives of learning as action between an individual and

the social environment. In this theory, situations such as life space and learning space are not necessarily physical places but a person's experience in the social environment. These situations are ingrained in communities of practice that have a history, norms, tools, and traditions of practice (Lave & Wenger, 1999). Learning is thus a process of becoming a member of a community of practice through peripheral participation. A process that involves interaction and collaboration within the community of practice. As such, situated learning focuses less on cognition, which takes place in the individual's mind, and more on the practices of groups (Contu & Willmott, 2003). In the classroom, situated learning stresses the opportunities for students to reveal their abilities and talents. It can provide students with a learning environment whose culture and tools are similar to those used in real life scenarios (Cleveland, 2011)

Situated learning theory according to Kolb and Kolb (2005) enriches the learning space concept by reminding us that learning spaces go beyond the teacher and the classroom. They include socialization into a wider community of practice that involves membership, identity formation, transitioning from novice to expert through mentorship, and experience in the activities of the practice. This is in consonance with Contu and Willmott (2003) that learning that is nested in the social and physical context is more effective than non-situated learning. Suggesting that life experiences are contextual since they are a product of the physical, social and psychological environment and concluding that the design of a learning space has the capability to constrict or promote the process of learning.

2.3.1.4.1 Impacts of Physical Environment Factors on Learning

All learning whether formal or informal, takes place in a physical environment with quantifiable and perceptible physical characteristics which can affect learners emotionally, with meaningful cognitive and behavioral outcomes (Graetz, 2006). A learning site is made up of students, teachers and the physical environment (Lippman, 2010). The physical environment plays a central role in any activity. In school, whether the physical environment is available, relevant and sufficient has influence on academic success. Taylor (2009) arguing from a theoretical perspective, states that a classroom's physical environment acts as a "silent curriculum". Monahan (2002) calls it "built pedagogy" implying that built learning spaces carry the pedagogical philosophies of their designer and thus, have the ability to influence how educators teach their students; that a trained eye can read the pedagogies facilitated by a space. Oblinger (2006) posits that a learning space can have a key influence on learning. It can encourage exploration, collaboration and discussion by bringing people together; it can also bear an implicit message of exclusion and disengagement.

The physical learning environment is thus important and directly impacts the behavior, interactions, attention, motivation, and productivity of teachers and students. The environment can facilitate and enhance learning (Taylor, 2009; Oblinger, 2006; Monahan, 2002). There is sufficient research stating that the conditions of the building in which students spend their time learning has an influence on how well they learn (Earthman, 2004). Within a classroom, the physical environment carries the message to students of what is to be expected in the environment and strengthens the function of the space. Space organization can help learners have an idea of adult expectations and power

structures (McGregor, 2004). High density for example means a lack of privacy and can hinder the student's ability and desire to learn; it can stimulate aggression, restrict movement and increase distraction, resulting in lessened academic achievement. On the other hand, a low-density environment implies that there is room for interaction and participation, leading to a positive attitude, an enhanced sense of friendship and better academic achievements (Kopec, 2006).

Learning environments ought to be responsive to learning needs. Lippman (2010) considers the debate on whether the learners should adapt to the learning environment or whether the learning environment should adapt to the learner, wrong. Lippman proposes that a better question would be how the environment shapes the learner and how the learner in turn influences the environment. This would require an understanding of the transactional relationship between the learner and the learning environment. Frith and Whitehouse (2009) discuss the 'functionalism theory', which argues that designing any space must start with an examination of the human needs and experience which include social, cultural and psychological factors. This aligns with McGregor (2004)'s earlier argument that a learning space design must be functional, not imposed or bought off the shelf; users should be involved in creating the design; the resulting design then becomes an articulated vision. Deed and Alterator (2017) also agree that there is a complementarity between a pedagogical approach that is learner-oriented and learning environments that facilitate the possibilities of where, how and when learning occurs. The student experience is enhanced by educational environments that afford student learning, create learning communities, foster engagement, provide informal opportunities for problem-solving and pay attention to the social components of learning.

The nexus between designed space and student behavior is indeed an important line of research that contributes to the broader research and practice related to designing for learning. Boddington and Boys (2011) note that theory around the design of learning spaces is underdeveloped and that there is need for effective and supportive frameworks. To do this, more empirical and contextualized research is needed. The intention of this study was to investigate library learning spaces in academic libraries in Kenya, specifically how they are linked to student learning behaviors and preferences. The aim was to use the data collected to develop a contextualized framework that can inform the designing and/or redesigning of the physical spaces to make them responsive to learning needs and various components of learning and thus enable better learning experiences.

2.3.1.5 Evolution of Physical Learning Spaces in Higher Education

Historically, research on learning spaces in higher education has not received much attention from scholars and researchers. Teaching and learning in higher education has been implicitly viewed as taking place independent of its location, needing only a ‘great teacher and a ready student’ (Temple, 2007, p. 11). Temple further notes that while the design of learning spaces in the schools sector has been of interest, literature on teaching and learning in higher education does not even mention the nature of learning spaces. Any reference to physical environments is in the context of space planning and campus architecture and not as an integral teaching and learning resource.

Formal classrooms and lecturing have a long history. Beichner (2014) observes that they are a continuation of age-old oral traditions of religious and cultural education when reading and writing skills were hardly there. As education became common place and

sought after, early universities in Paris, Bologna and elsewhere continued with the lecture method allowing teachers to maintain their historically authoritative position. By early 1800s, European chemists having noticed that their students did not learn much from the lecture method, started to introduce laboratory work. Beichner (2014) further notes that in 1906 a physicist, Robert Millikan, wrote a lab manual in which he emphasized the need for a hands-on experience to help students learn complex concepts. This is how departure from the lecture method as the sole means of instruction and incorporation of active learning begun. By the 1980s, task-based learning had spread to other content areas and in the 1990s rigorous research on learning started to illustrate that lecture settings did not allow students to learn as much as expected.

Tracing the history of classroom design, Posthuma (2018) explains that in the nineteenth and early twentieth centuries, students were generally expected to learn enough to be self-sufficient, well-mannered, informed, and of benefit to the community. The scope of subjects was, therefore, small and a simple design of a one-room schoolhouse also known as the Common School was in use. The Industrial Revolution brought with it new laws which caused an increase in enrollment and this in turn occasioned a change in the classroom where floor space had to be maximized with teachers on a raised platform and students sitting in fixed desks, many rows deep. Later, from early to mid-twentieth century the first signals of a shift from teacher-centered to student-centered learning was witnessed. More open spaces, desks arranged in groups and outdoor learning characterized this era. Posthuma observes that this period was short-lived as the post-World War II baby boom led to rising student populations and exploding classrooms. This caused teachers to revert to some of the old teaching methods and classroom

layouts. The student-centered classroom with an outcome-based, collaborative and active learning started to be seen again in the 1970s. Tremendous technological advancement in the 1980s and 1990s was changing the job market, teachers realized that change was no longer optional and, thus, technology entered the classroom.

For a long time, classrooms have been the single most important learning locus in higher education. Other spaces for learning included the library, the faculty room or the café in town (Brown, 2005). In more recent times, so much has changed and the Internet has given rise to a wealth of new, network-based applications. Beichner (2014) states emphatically that the world is different, students now expect to be continuously connected to information and people. Information is readily available with mobile devices putting published information at their fingertips. This is in agreement with an earlier observation by Brown (2005) that a whole generation of learners has grown up using computers and other networked devices; ICTs are no longer exotic or optional for the Net Gen student. Beichner (2014) observes that technology has had an effect on how students think and their attitude towards academic authority. Beichner encourages that classrooms should change so as to enable active participation in learning.

Developments in technology have also had an impact on the locus of learning in higher education. The classroom notion has evolved and expanded, there is significant investment in classroom technology and a number of new functionalities have been witnessed. Classroom resources are more digital and delivered via network (Brown, 2005). There are institutions that serve as models for creating learning environments that foster critical thinking, knowledge creation as well as active and collaborative learning.

These include the SCALE-UP project at North Carolina State University, TILE classrooms at the University of Iowa and the PAIR-up model at the University of Minnesota among others (Harvey & Kenyon, 2013). Indeed, as instruction in higher education shifts away from content delivery towards more active models of learning with a student-centered and inclusive pedagogy, spatial aspects of education are brought to the fore (Morieson et al., 2018; Brown, 2005). Unfortunately, most classrooms in higher education institutions are designed and configured with the traditional model of instruction in mind (Perks et al., 2016). Yet, this model, with the teacher at the front and tiered, fixed theatre-like seating, is no longer able to accommodate the diversity of teaching and learning practices. There is heightened interest among scholars to examine classroom space and, especially the link between classroom model, pedagogy and the learning experience. It is worthwhile to carefully consider the notion of space and how it impacts the student experience (Morieson et al., 2018). Posthuma (2018) observes that the biggest concern should be whether students have the tools and environments they need not only to enter into an unknown future, but to play a part in shaping that future.

From the foregoing literature, it is clear that learning spaces in universities internationally are going through a revolution. In a time of technological advancement and pedagogical change, when higher education is under pressure to justify its existence as a place, physical learning spaces are emerging as ways to respond to this shift while accommodating the changed campus demography and the shifting social, economic and digital futures. Spatial designs that are student-centered support student success, meaning that learning spaces can be transformative to pedagogy and to the student experience.

This study looked at library learning spaces which are part of the campus physical learning landscape though they are largely seen as informal.

2.3.2 Academic Library Learning Spaces

Since the age of enlightenment and the rise of universities across Europe, academic libraries have held a central place in universities. Different from their monastic origins, academic libraries have been preeminently sited and heroically designed in terms of scale and character, making them important places of gathering and learning for scholars throughout the Western world (Freeman, 2005). Association of College and Research Libraries [ACRL] Research Planning & Review Committee, & Lewis, (2010) describe the mission of academic libraries as that of supporting the teaching, learning and research activities of their communities. Pearson (2007) observes that in the past, libraries were storehouses and reservoirs of knowledge. Libraries existed to store, organize and provided access to books in large amounts. Their value was measured in terms of their size. However, technological advancement and the arrival of the Internet has brought a lot of change in the world such that the future of libraries is much debated.

2.3.2.1 Development of the Academic Library

Latimer (2011) traces the development of the academic library and reports that in the United Kingdom, university libraries were founded in the thirteenth century at the colleges of Oxford and Cambridge, followed by Scottish universities in the fifteenth and sixteenth century and later on, the Trinity College in Dublin. During this period readers used enclosures, security of the books was paramount as they were rare and had to be chained. In the nineteenth and twentieth centuries, the number of universities in the UK

grew and so did books and readers. Libraries became more open, zoned into reading rooms, service areas and stacks. University growth witnessed in the 1960s was more deliberate about academic libraries, architects were employed to design libraries as part of the master plan of the universities. These libraries occupied central areas on campus, they were spacious and dominated by circulation desks and catalogue cabinets. They favored open access with reading areas adjacent to the stacks.

Dempsey and Malpas (2018) observe that the enormous growth of universities witnessed in the post-war period was mirrored by big increases in publications, growth of libraries to manage those publications and hence the traditional collections-based view of libraries. The academic library was regarded as a physical demonstration of the growing scholarly and cultural record, created through research and scholarship. Thus, the quality and value of libraries was measured in terms of collection size. This is in consonance with the observations of Holmgren and Spencer (2014) that all the way from the beginning of the twentieth century to the mid-1990s, academic libraries were chiefly collection curators or repositories of information; charged with the responsibility of developing and making available scholarly resources. In the United States, Freeman (2005) states that for over 200 years, libraries were designed mainly as places to collect, access and preserve print collections, with entry and use being regarded as a privilege. While the exteriors were stately, the interiors were dim, unexciting, difficult to navigate and only accessible to the serious scholar. The plan and design of these buildings was dedicated to preservation, security and processing of materials. Seal (2015) describes these libraries as sterile places, with a mausoleum model, that were minimally used.

A look at the trends that have shaped the university library space by Childs et al. (2013) reveals that before the 1970s, the concerns revolved around insufficient space owing to the growing collections. In the 1970s, lack of space was still a concern as changes in teaching and learning caused an increase in the number of users. There was also a need to create separate spaces for undergraduates. In the 1980s new technology and how it was to affect the library was the main concern. Accommodation of the technology and inadequacy of staff space were of interest. The 1990s brought more awareness of how technology and other changes could affect libraries. There were predictions and fear that the library could disappear although most writers saw a future of library buildings. New and upcoming teaching methods like group work also came to the fore during this decade. After the year 2000, much more attention has been given to the idea of space. There are differing opinions with some seeing that the importance of the physical space has increased and others seeing the future of the library as virtual. There are also views focusing on the appeal of the library as learning space while others argue that the paradigm shift brought about by technology lends space low priority. As the existence of the physical library is cast into doubt, the very purpose of the library continues to be contested.

It is important to note that at the turn of the century and the dawn of the digital and electronic age, the main concern in libraries was how to strike a balance between print and electronic collections (Latimer, 2011). As the digital shift progressed in the 1970s, the centrality of the print collection to research and learning patterns started to lessen. Resources that were scarce in the print world were now bountiful. The digital environment was characterized by marked growth and diversification of resources which

support the discovery, creation, curation, sharing and use of information resources. Again, changes in learning and research patterns were the major drivers for the academic library (Dempsey & Malpas, 2018). New names for libraries like resource centers, idea stores, cyberspaces among others emerged during this period (Latimer, 2011).

The information technology era came with a prediction of the death of the physical library. Many contended that the virtual library or online space would replace the physical library (Seal, 2015; Cribb & Schimdt, 2011; Freeman, 2005). Freeman (2005) explains that decision makers often demanded to know the relevance of the library in the age of computers before they could commit any funds to its perpetuation. Cribb and Schimdt (2011) observe that claims that libraries will become obsolete and the question of who needs the library anymore continue to be heard, especially when times are hard and competition for funds is tight. However, Seal (2015) reports that before the predicted death of the physical library could happen, a move away from the conservative view of library space and use, brought about a resurgence and popularity of the academic library like never seen before. Technology access, comfortable furniture, permitting food and drink, made the academic library a destination on campus.

2.3.2.2 Factors Shaping Current Academic Library Space Design

In the electronic age, libraries, over and above housing print collections, need to provide avenues for navigating the world of information that is beyond their walls. The new approaches to library design are aimed at bringing together the printed and the electronic worlds of knowledge (Latimer, 2011). Users of libraries and the collections held in libraries have changed and the shift is ongoing; space reforms are a reflection of those

changes (Cannell, 2013). A culture of renovation and refurbishing has developed to cater for the new and emerging needs (Cribb & Schimdt, 2011). Latimer (2011) explains that changes being witnessed in library design are driven by such factors as the increasing availability of e-resources and the resulting shift in the balance between printed and online collections; technological advances, library automation, use of robots, compact shelving and RFID technology; need for social spaces; and the need to market libraries given the competition coming from other information providers. Cannell (2013) agrees that academic libraries will have to address challenges brought about by the changing pedagogical environment, shifting user expectations with regard to quality of service and space, new ways in which users expect to use the library and behave therein, greater dependence on digital resources and reduced print collections. Cannell observes further that most of the buildings being redeveloped are from the 1960s and 1970s, they are becoming obsolete given that their style, materials and interior décor was done according to the practices of the time and may not work for a student in the second decade of the 21st century.

2.3.2.2.1 New Concepts of the Library

For a long time, the library was simply architectural and practical, well defined and could not be differentiated in socialist and capitalist countries. When it came into question as a physical space due to technological and social changes, librarians started to consider its future role as a place (Eigenbrodt, 2013). Library as a place was first put forward by Leighton and Weber who defined it as where students go in search of intellectual discourse, exchange of information and socializing in an academic environment (Seal, 2015). The 'library as a place movement' emerged in the 1990s, Steiner and Holley

(2009) explain that librarians were involved in creating physical spaces that could accommodate students' social activities as well as learning outside the classroom. This caused alterations in library space such as the introduction of cafes, wireless networks, longer hours, and acceptance of food, drink and noise leading to spaces that were comfortable, welcoming and inspiring for academic work. Montgomery (2014) refers to the academic library as a place for informal learning, where students can set their own goals and determine their needs.

Another concept, the third-place, originated with Oldenburg (1999) who states that to be emotionally healthy every individual needs three places: home, work and a third place. Oldenburg explains that home should be comfortable and safe, work should be consistent and satisfying while the third place should provide a level playing ground, have long hours, little or no stress, be less structured and interactive. In a third-place conversation is valued, the tone is playful and the mood is light. Eigenbrodt (2013) observes that there are many contemporary functions that third places share with libraries. As an informal place it would allow users free access, gathering and purposeless communication. Montgomery and Miller (2011) view the library as a third place where users can meet and create a sense of community. In the university, the library provides faculty and students a comfortable place to meet others from different socio-economic backgrounds and disciplines providing an opportunity to share one's experiences while learning from others, to interact with familiar people and meet new ones, and also to get a human connection by being around others while maintaining one's privacy. Blummer and Kenton (2017) posit that by fostering community and collaboration, libraries serve as another place beyond home and work. The communal experience in academic libraries

that allows students to work individually, to see and be seen, ensures that despite the availability of resources and services online, the library will always be valued as a place for study, socialization, shared learning and shared knowledge.

Closely related to the third-place concept is the library as a meeting place. Eigenbrodt (2013) argues that the concept is not about meeting peers in the library, its basis is the idea of a communal arena. Using the words public sphere, Golten (2019) explains that a communal arena is a space between the private sphere, the market and the state where public issues are deliberated. Eigenbrodt (2013) likens it to the ancient Greek agora which was an open space meant for the male aristocratic elite. However, in the communal arena, there is unintended contact between people of different social, cultural and educational backgrounds, not necessarily leading to intensive and positive communication. McCallister and Peuler (2016) note that the purpose of the academic library has been expanded from serving mainly as a place for academic engagement and study to include social engagement. Golten (2019) states that libraries have taken a social turn, away from their traditional focus on maintaining collections towards focus on knowledge sharing and creation as well as cultural experiences.

2.3.2.2.2 Technology

The emergence of technology seems to have had an influence on the design of library space in the 21st century (Blummer & Kenton, 2017). The role of technology and the increasing use of online resources form most of the discussions about the future of the academic library space (Childs et al., 2013). Historically, there are three main periods of technology in academic libraries: the first one (1960-1980), where technology was used

to automate internal processes like cataloguing and acquisitions; the second one (1980-1994), marked by the entry of the online catalogue; and the third and main period extending to the present, is the arrival of the Internet. Each of these periods has had various space implications; libraries have had to decide how best to implement the technologies and the extent of change to bring about in their space arrangements (Holley, 2013). Cribb and Schmidt (2011) posit that with the advent of ICTs, libraries began to implement new approaches to space use including increased numbers of computers and work stations, wireless access for mobile devices and less significance of print collections as the user emerged as a focus. The user as a focus approach has brought exhibition spaces, coffee shops into libraries and a variety of spaces for meetings, study and research. Library designs are now accommodative of the virtual, readers are now viewing and listening, collections range from print to multimedia while access is not just local but also remote. This is in agreement with the view of Freeman (2005) that integration of information technology is a catalyst that is transforming the library into a more critical intellectual center of life on campus.

However, Holley (2013) observes that technological advances may slow the need for more space in academic libraries or allow them to shrink altogether. Some libraries are already fully digital and Childs et al. (2013) note that this has caused a reduction in the physical space occupied by some libraries. A good example is the University of Strathclyde, Scotland, which felt that future library users would be Net Gens who would prefer to access resources virtually. Staley and Malenfant (2010) citing a report by the Association of College and Research Libraries (ACRL) on how libraries would have changed by the year 2025, also remark that possibilities of campuses with purely virtual

libraries exist. Nonetheless, the ACRL report underscores the continued need for a physical library with a human face. Latimer (2011) maintains that contrary to predictions, the impact technology has had on library design has largely been positive. Academic libraries, instead of diminishing, they are changing and taking on roles that support emerging approaches to learning, teaching and research. Holley (2013) reinforces that the academic library does not need to define itself as a place for access to physical materials anymore. It is now a service point making information resources available even for those users who may never visit the library.

2.3.2.2.3 Teaching and Learning Methods

While technological change was happening, the culture of teaching, learning and research was also drifting. Teachers moved toward a student-centered approach where learners started to play a more active role in their learning. There was increased application of such methods as case study, problem and resource-based learning, projects, group work, hybrid and blended learning, such that teaching facilities and information services had to be reconsidered (Cribb & Schmidt, 2011). Historically, libraries are intertwined with learning. Meaning that changes in education have an impact on libraries (Andrews et al., 2016). Libraries, especially academic libraries are going through reinvention, they are rethinking their spaces or building new and innovative libraries that align to the changing needs of teaching and learning (Childs et al., 2013). Librarians are no longer custodians of print collections but managers of libraries which are increasingly learning and social spaces. The value placed on the social function of the library and the shift towards collaborative and participative approaches to teaching and learning is reflected in the design of new library buildings (Secker, 2008). Childs et al. (2013) report that the view of

the library as a social space has gained popularity and libraries in the United Kingdom like the Information Commons at the University of Sheffield, the University of Warwick's Learning Grid, and the Saltire Centre at Glasgow Caledonian University, have been designed in a way that responds to the idea of the library as social.

2.3.2.2.4 The Changing Student Population

Libraries must adopt a new style to service provision so as to remain relevant and useful to their varied clients (Trembach & Deng, 2018). Academic libraries being an essential component of the whole campus experience, cannot afford to be left out of the ongoing debate on the need to create and maintain an educational setting that is aligned to the learning styles and preferences of Net Gens. The philosophy of the reimagined library service requires a good understanding of Net Gens who are the primary stakeholders, how they learn, what information literacy means to them and how to make the academic library suitable and alluring to them. Trembach and Deng (2018) note further that present day libraries serve four different generations: the Silent generation (born between 1925 and 1942), the Baby Boomers (born between 1943 and 1960), Generation X (born between 1961 and 1981) and the Millennials (born between 1982 and 2004). These generations come from fairly different backgrounds, shaped by different social, political and cultural events and it is expected that librarians take these into consideration in the design of instructional activities, learning products, physical spaces and cyberspaces. Whereas Cribb and Schmidt (2011) argue that more mature users are also heavy technology users, making the differences between the young and old increasingly less distinct, Childs et al. (2013) conclude that variety in student populations found at various

universities and the nature of their studying, whether distant, online or part time, could create much greater differences with regard to how space in academic libraries is used.

2.3.2.3. Current Trends in Academic Library Space Design

The basis of library space design has been transformed. Throughout the world, the focus has shifted from storage of collections, providing work spaces for staff and service desks, to emphasis on how advancing technologies can be applied in libraries and how best varying user needs and preferences can be met. Cribb and Schmidt (2011) observe that the pace and extent of this transformation is varied as it is determined by differing cultural values, interpretations of user behavior and needs, views of librarianship and how pedagogy is regarded in individual institutions and regions. However, common themes emphasizing flexibility, accommodation of online and distance learning, group and individual study, as well as self-service have developed.

In response to changes in higher education and in the library scene, Steiner and Holley (2009) observe that a growing number of academic libraries has created information or learning commons. Oliveira (2017) describes library spaces as having moved from an era of book boxes where space was designed to hold collections through the Information Commons era which was accelerated by the digital revolution to the current shift to learning spaces which is inspired by the need for libraries to contribute to the learning experience. Referring to the Commons, Steiner and Holley (2009) opine that despite the modifications and challenges involved in setting up a Commons, they are a catalyst for change and that they have been overwhelmingly embraced.

2.3.2.3.1 Information Commons

Many scholars contend that Beagle (2006) is the authority in all aspects of the Information Commons (IC) (Blummer & Kenton, 2017; Seal, 2015; Steiner & Holley, 2009). When the IC appeared in the 1990s, it was under labels such as Information Arcade, Media Union and Virtual Village although Information Commons is what is most commonly used (Beagle, 2006). Even so, such words as ‘academic’, ‘collaboration’, ‘teaching’, ‘technology’ and ‘media’ are also used with or in the place of ‘information’ (Bennett, 2008, p.183). The Information Commons was originally defined as a new model of service delivery in academic libraries which can be an exclusively online environment or a physical space for access to a variety of digital services (Beagle, 1999). Later on, the IC has been viewed as technology tools working with physical, digital, human and social resources to support learning. It is a one-stop-shop, multipurpose place where assistance, media support and reference help are readily available (Beagle, 2006; Spencer, 2006).

As a model, the Information Commons began to appear in the United States in the 1990s. It was first introduced in the University of Iowa where it was called the Information Arcade and two years later, in 1994, at the University of Southern California. In the two decades that followed, this model advanced and became prominent with hundreds of examples in libraries around the world (Seal, 2015). Karasic (2016) notes that the Information Commons helped to bridge the gap between physical and virtual spaces while Childs et al. (2013) observe that the IC has been one of the most influential ideas in academic library design since the 1990s.

The IC has four basic features as explained by Seal (2015) and Oliveira (2017): technology; spaces for group work; digital media and online collections; and access to librarians and technology experts. According to Seal (2015), the service philosophy embodies connectivity, collaboration, creation and community. Connectivity is the student's desire to connect with information, knowledge, peers, family and more via the Internet. Collaboration has to do with formal and informal study groups enabled by flexible furniture and group study rooms. Creation is concerned with knowledge creation that is facilitated by online and print resources, various software packages for analysis, statistics, editing and group projects; digital media services; and support from information professionals. Community brings in the social nature of interaction that happens in the IC where the designs of the spaces provided enable formal and informal meetings as well as enhance the social aspects of learning. Seal (2015) concludes that owing to this four-pronged approach and variety of services afforded, the IC has enlivened the library and drawn in users. This agrees with Spencer (2006) that Information Commons developed in university libraries are very popular with students. They recognize and nurture the unrestricted way in which students relate with technology, their need for connectivity and desire to multitask. Karasic (2016) also points out that the IC has been lauded for its services which include research guidance, instruction, technology and flexible physical space despite the challenges of training staff to support both research and technological needs.

Information Commons have not been equally positioned in universities. Some have remained library-centric mainly facilitating access to the widening array of electronic resources, media tools and productivity software. Others fulfil this role and move further

to become part of campus-wide efforts to foster the application of technology in teaching and learning as well as collaboration among learning support units on campus (Beagle, 2010). It is worth noting that the IC has not been static, it has progressed and advanced in response to improvements in technology; new pedagogies like online and blended classes, flipped classrooms and recorded lectures; social media; and changing user needs and preferences. Many new technologies are now found in the IC: “1) mobile docking stations/modules for individual and group work; 2) video walls; 3) touch screen computers and signage; 4) 3-D printers; 5) circulating iPads and other tablets of all sizes; 6) copier/scanner combinations; 7) wireless printing; 8) poster printers; 9) charging stations or lockers; 10) splitters for group listening; 11) green screens” (Seal, 2015, p. 7).

Reviewed literature reveals that the extent of implementation of the IC across the globe is varied. Oliveira (2017) explains that the Association of Research Libraries (ARL) surveyed 74 of its members in 2004 and found that 22 of them had developed an Information Commons. The findings of Donkai et al. (2011) revealed that the development of Information Commons was in its early stages of development in academic libraries in Japan. In Pakistan, Sheikh (2015) found that most university libraries are yet to implement the IC model in its absolute form. This closely mirrors the situation in Africa where reporting in 2010, Boakye describes the Research Commons as very new in Ghana and in most of the continent. Adeyemi (2015) confirms that in Nigerian academic libraries, the IC is not in operation. Similarly, the study of Musangi et al. (2019) concludes that university libraries in Kenya have not implemented the Information Commons model in its totality. However, the case in South Africa is different. An examination of library trends by Ocholla and Ocholla (2020) revealed that

public university libraries in South Africa have developed non-traditional space-related services like research commons, group study areas and makerspaces. Makerspaces were identified as a fairly new development.

2.3.2.3.2 Learning Commons

There exists a definitional problem in differentiating between an ‘information commons’ and a ‘learning commons’ (Steiner & Holley, 2009). Bailey and Tierney (2008) declare that a Learning Commons (LC) has all the aspects of an Information Commons but “extends and enhances them” (p. 2). An LC is more integrative within the library and the wider institution as it attempts to clearly align to the institutional vision and mission. It is likely to bring on board services previously found outside the library and offer a wider variety of workspaces for collaboration. This is consistent with the Beagle (2004) explanation that the Learning Commons is aimed at contributing to other campus priorities through collaboration with other academic units. It is a reflection of a shift from transmission of knowledge to creation of knowledge and self-direction in undergraduate learning since it fosters learning through inquiry, consultation and collaboration (McMullen, 2008).

While the Information Commons supports the mission of the institution, the Learning Commons enacts that mission. The LC unlike the IC is interested in what happens in a space not just what is found in a space. A true Learning Commons must be interested in student learning in relation to space (Bennett, 2008). This is in consonance with Beagle (2006) that the IC transforms into an LC when its resources are organized in collusion with learning initiatives and outcomes identified by other academic units through

teamwork. Indeed, the LC tries to accomplish a more advanced purpose as it is intentional about learning by bringing library users together to collaborate on specific learning goals (Wolfe et al., 2010; Steiner & Holley, 2009). Beagle (2010) reports that libraries that first implemented the IC with success, later expanded their service provisions and facilities to cater for collective programs of learning support and renamed them Learning Commons. Bilandzic and Foth (2013) describe it as a full-service space for learning, research and projects that promotes interdisciplinary.

According to Lippincott and Greenwell (2011), the strength of an LC is demonstrated by the relationships it supports through modern, student-focused technologies. These may be among students, between students and faculty or staff, between students and equipment, or between students and information. Wong (2014) observes that among students, the LC is a value-adding component in the library which makes them view the library more positively thus staying longer whenever they visit or visiting more often. Chan and Spodick (2014) note that at the Hong Kong University of Science and Technology Library, a variety of student activities, like exhibitions, book talks, art displays and demos, which were previously spread throughout the campus in offices, lecture halls, meeting rooms and exhibition halls have moved to be hosted in the LC, where students gather, learn and engage in intellectual activities. It has become an active facilitator of learning, a supporter for collaboration and interaction, and a suitable platform for team projects, multimedia work and wholesome development.

2.3.2.3.3 Learning Spaces

Various spaces are now referred to as learning spaces in academic libraries and considered a third iteration of the commons concept. Their mission goes beyond that of the Learning Commons as they offer both formal and informal flexible learning spaces that better facilitate learning. To support the essential social dimension of knowledge and learning, learning spaces provide for social interaction and knowledge exchange (Somerville & Harlan, 2008). The evolution of academic library spaces is traced by Zhu (2021) who observes that the concept of the library as study room with print collection evolved into Information Commons in the 2000s and later changed into a Commons 2.0 incorporating the freedom of wireless connections, flexible workspaces, computing resources, self-help, electronic resources and computer software. The aim was to support and enact the university mission of teaching and learning. More recently, coffee shops have been opened in libraries, makerspaces have been established and compact stacks have been built off-site to free-up space in the libraries.

An excellent learning space provides curriculum support and a variety of student services. Students can use the space to record and practice their presentations, display their work, converse with peers, get tutor support, connect to the Internet, power up their devices, and make use of high-end computing technology in a comfortable relaxed environment with refreshments (Andrews et al., 2016; Massis, 2012). Oliveira (2017) opines that such learning environments should be aligned to the diverse learning styles, behaviors and abilities of students; with a team of staff readily available to support and assist the students as they work towards achieving their learning goals.

Many academic libraries across the world are repurposing their spaces to enrich student learning experiences. Watson and Howden (2013) outlining UK case studies report that the trend in the design of academic libraries is: 1) Open plan which comes with the promise of reconfiguration, endless possibilities and brings the prize of flexibility despite the lack of noise controls and privacy. 2) Technology-rich space with a wired or wireless infrastructure enabling widespread individual and group use of computers and mobile devices. Libraries are moving away from providing access to devices towards access to high quality network and data. 3) Service-rich environments featuring great degrees of self-service and integration of a range of services for students within the library, made possible by rebuilds and renovations.

In the USA, Simon (2013) through an analysis of case studies discloses that academic libraries are bringing together learning spaces and traditional instructional spaces. To support a wide variety of student activities, these spaces are very flexible with furniture that can be reconfigured with ease to create meeting rooms, traditional classrooms or relaxed study area. They have extra storage for computers, smart boards and chairs. There is infrastructure to support access to local servers and the Internet. Acoustic conditioning is done to reduce distractions coming from conversations and lectures. Lighting is done to ensure that a range of light intensity is provided. Restroom facilities are accessible for those working into the night and service kitchens provide refreshments for meetings and teams. Video and recording devices as well as panic buttons constitute security in the spaces.

An overview of Chinese academic libraries is provided by Anderson (2013). Anderson observes that the view of the library is still traditional. Learning is viewed as instructional and the role of the library is to act as a repository supporting individual study, contemplation and reflection. Despite this, the scale of the libraries is big and could allow re-fashioning in response to future demands. Academic libraries in Hong Kong on the other hand, as stated by Fox and Sidorko (2013) are making strides to create learning spaces. In response to changes in technology, curriculum design and learner behaviors, libraries have: expanded their spaces, redesigned them to accommodate a range of technologies and varied learning styles, and introduced Learning Commons.

In the 21st century, libraries have a greater role to play as opposed to being of reduced importance. In universities, they are an essential part of 21st century learning infrastructure that enables through broader provision of services and links to the unexpected encounter and conversation (Watson, 2013). Holmgren and Spencer (2014) predict that by the year 2024, academic libraries would have shifted from repositories of information into academic commons. Here, spaces will be designed in a manner that enhances student learning and facilitates collaboration, a symbol of the move towards a focus on users. Harper and Mathues (2020) explain that the 21st century academic library remains a symbol of knowledge, learning and scholarship within the university. Over and above this, it bolsters innovation and diversity and accommodates the needs of a diverse community on campus.

2.3.2.3.3.1 Twenty First Century Library Learning Space Attributes

A look around the world shows academic libraries that are merging state of the art architecture with inspiring interior spaces and functionality (ODonnell & Anderson, 2021). Listing defining characteristics of learning spaces, McDonald (2006) notes:

“... ideally learning spaces should be functional, adaptable, accessible, varied, interactive, conducive, environmentally suitable, safe and secure, efficient and suitable for information technology. New spaces should have ‘oomph’ capturing the minds of users and spirit of the university”

In agreement, Watson (2013) observes that the 21st century library is flexible, responsive, dynamic as opposed to static and meant for the user not the librarian. Various attributes or features have been identified as characteristic of library spaces in the 21st century. Watson and Howden (2013) observed open plan, technology-rich and service-rich spaces as the trends in UK libraries. Simon (2013) described libraries in the USA as flexible with extra storage, acoustic conditioning, lighting variations, access to the Internet, restrooms, kitchens and fitted with modern security facilities. Fallin (2016) identified three main developments in the modern academic library: technology, learning spaces and new support services. Below are the key attributes of modern learning spaces as discussed in literature:

A notable attribute is the shrinking resources. Courant et al. (2010) suggest that in the 21st century electronic resources could replace physical library collections. To manage print collections, libraries are using high density or compact shelving (Webb et al. 2008) and off-site storage facilities (Little, 2013) mostly for parts of their collections that are not accessed frequently. While this limits those users who want to browse the stacks (Massis,

2012), financial gains have been experienced by libraries (Courant et al., 2010) and the free space is being used to create or expand learning spaces (Fallin, 2016).

Technology has been incorporated in libraries. Thomas (2000) observed that library buildings were not designed with the ventilation, networking and electricity requirements of new technology in mind. Thus, as noted by Fallin (2016), libraries have had to redevelop their buildings substantially or construct new buildings to accommodate technology. This has taken the form of wired or wireless infrastructure to support the use of computers and mobile devices (Watson & Howden, 2013). Extensive power outlets, computing, Wi-Fi and quality printing are now common in libraries (Cunningham & Tabur, 2012). As such, technology has shifted the boundaries of the library. Libraries have been able to introduce new services and their role as information repositories has been eroded.

From the foregoing literature it is evident that the shape of the library has greatly changed in the 21st century. The view of the academic library as a store house has significantly changed and libraries no longer see their role as that of collecting and organizing information resources. Libraries are increasingly more about creating and supporting learning communities. They have had to change their spaces as part of the ongoing reinvention. While many libraries have documented this reinvention, existing literature does not reveal what changes are taking place in libraries in the global south. This study set out to fill this gap as regards academic libraries in Kenya.

2.3.3 Student Library Learning Space Preferences and Behaviors

Academic libraries are focused on providing excellent spaces, services, technologies, and websites. To be able to define library success, Neal (2009) observes that it is important that academic libraries develop a sustained and intimate understanding of their user communities. Students being the primary focus are diverse with wide-ranging needs, as full-time and part-time, undergraduate and graduate, resident and distance learners, local and international, among other factors that influence the learning experience and relationship with the university library. Eskridge and Duckett (2012) note that to know and understand user behaviors and expectations, librarians are leveraging qualitative methods, ethnographic approaches and participatory design processes. Neal (2009) and Andrews et al. (2016) explain that one area of importance for academic libraries is the rethinking of space, how it is planned and its identity since library use trends are shifting with technology causing the demand for flexible and adaptable library space. Montgomery (2014) agrees that creating such space demands an understanding of how students learn with the aim of facilitating their learning in the space of choice.

2.3.3.1 Learning Space Behaviors

Studying student behaviors through observations and surveys offers librarians and other stakeholders' insights into student choice of study space, what they bring to the space, what appeals and satisfies them in that space, what they do in the space and how they attribute it to their academic success (Nitecki & Simpson, 2016). Noting that it is not possible to measure the success of non-classroom spaces without a definition of the kind of learning expected in the spaces, Bennett (2011) defines this learning as intentional

learning and identifies the following twelve specific learning behaviors that illustrate intentional learning:

1. Students work on class assignments with classmates outside of class (collaborative learning)
2. Students work individually to understand class material and complete assignments (studying alone)
3. Students study alone in close proximity to other students studying alone (studying along)
4. Students review class work with other students, family or colleagues outside the class
5. Students review class material with faculty members outside of class
6. Students perform non-course activities with faculty members
7. Students work on a non-course research project with a faculty mentor
8. Students deliberate with other students whose religious beliefs, political standpoints and personal values are very different from theirs
9. Students hold discussions with other students who differ in ethnicity
10. Students engage in independent study or a self-designed major
11. Students have a finalist program like a comprehensive exam or thesis project
12. Students are part of a learning community

These learning behaviors are important in space planning as evidenced by various library space researchers. Jordan and Ziebell (2009) investigated client behavior at the University of Queensland Library and found that respondents visited the library to undertake activities related to individual study, social or group learning. In many

instances respondents achieved less than what they intended and did more of other things while in the library spaces. Most of them were regular visitors and came to the library from home or class and planned to spend between thirty minutes and two hours there. This time was mostly spent using computers or at the quiet study spaces. Other activities included using e-mail, the Internet, social media, meeting with friends, eating and borrowing books.

Students also seem to seek community over isolation. An observation of Killam Memorial Library at Dalhousie by Bedwell and Banks (2013) revealed that unlike the expectation that students doing individual work would seek isolated and silent spaces, students studying alone sought quietness and community over silence and isolation, a behavior that is also described as studying along by Bennett (2011). These students chose places where other students were working, even repurposing group study tables for individual work. High-demand for group study space was observed with a display of cooperative behavior when forming groups and creating work spaces, using power outlets and taking shifts at computer workstations. This fits in with the definition of collaborative learning by Bennett (2011).

There is a tendency for students to repurpose learning spaces. A study of a quiet study room at the Faculty of Humanities and Social Sciences at Osijek University, Croatia, found that although this library space is mostly used for individual study, a significant amount of group work was present. Students seemed to use the space not only as a working environment but also as a social space while making attempts to adhere to the quiet policy and respect for privacy. Students met and quietly chatted with others, rested,

ate and drunk, used their telephones and listened to music. Interestingly, users also seemed to be quite tolerant of a certain noise level (Tanacković et al., 2014). Similarly, Bennett (2007) as well as Head and Eisenberg (2011) report that Net Gen students seek environments that are free from distractions yet have some noise and activity. A study of informal learning spaces by Ngoc (2015) confirms that noise helps students to stay focused while quiet spaces make them anxious. Further, Ngoc (2015) reports that students desired a measure of control in the learning spaces, where possible students customized the spaces with the most popular way being to rearrange furniture to get more study space and privacy. Where customization was not possible, they either adapted or left.

Another study by Beatty (2016) at the Taylor Family Digital Library (TFDL) in the University of Calgary sought to find out what students did in the library and reports that students mainly engaged in such learning activities as studying, working on assignments and writing notes, mostly on their own although some noted that they worked in groups. Other activities at the library included relaxing, using computers or printing. Likewise, Ramsden (2018) conducted an ethnographic study of two higher education libraries and in response to the research question ‘what do students do when they visit the library?’, Ramsden reports that students primarily visited the library to study – read, write and use specialist software. When groups visited the library, their activities were mainly supportive of each other, adopting guiding roles to ensure the study purpose is achieved alongside bonding activities although these were often loud and led to domination of the environment by the group, thus, deterring other people from the area.

2.3.3.2 Learning Space Preferences

Various studies report the range of student preferences in the learning spaces. The findings of a longitudinal study at the Sheffield Hallam University by Harrop and Turpin (2013) led to the construction of a typology of informal learning space preference attributes. The nine attributes that include destination, identity, conversations, community, retreat, timely, human factors, resources and refreshment were used by this study to discuss the literature on student library learning space preferences.

2.3.3.2.1 Destination

Harrop and Turpin (2013) explain that the destination attribute concentrates on where students go to study and report that proximity of a space to other activities of interest influences its choice as a study destination. Also, students selected spaces on the basis of their personal requirements which changed according to the activity being undertaken causing them to use different spaces at different times and for different activities. This was also reported by Jordan and Ziebell (2009) who found that students chose to work in the library because it was conveniently located. Ngoc (2015) found that students preferred spaces that are closer to their destinations and locations; also, those designated as student areas were chosen since they could undertake student-related activities without restrictions.

2.3.3.2.2 Identity

A learning space's identity has to do with its ethos and the message it sends about how it should be used. Harrop and Turpin (2013) found that students sought a range of spaces including those described as studious, relaxed, informal and also those full of activity. A

significant number of students was observed working in the Student Union and cafeteria which led to reconfiguring and space not being used in the manner anticipated by the institution. Students at the University of Queensland described the library as having a good study atmosphere (Jordan & Ziebell, 2009). May and Swabey (2015) report that results from many studies indicate that students appreciate the scholarly nature of libraries. For example, according to the findings of Cunningham and Walton (2016) students chose informal learning spaces other than the library because they were conveniently located, those who chose the library saw it as a studious space despite a lack of geographical proximity.

2.3.3.2.3 Conversations

Great importance is placed on spaces for collaboration and interpersonal communication. In a survey of American university students, Bennett (2007) identified these four key learning behaviors among others: conversations with students from a different value system; discussion of class work out of class; discourse with others of a different race; and group study. Harrop and Turpin (2013) observed that there were many groups working across the campus spaces. Learning Centers were preferred since they were dedicated for students doing collaborative work. The Olin Library at Rollins College was surveyed before and after renovation and Montgomery (2014) reports that collaboration and talking were highly cited as what worked well for users in the library space. This is confirmed by Ellis and Goodyear (2016) that students prefer spaces where they are likely to meet and interact with their friends. Andrews et al. (2016) found that students were generally frustrated with having to reserve spaces for collaborative work, variety in the nature of group work was noted and hence a proposal for a mix of sizes of group work

space to include both small and large group study rooms, enclosed or with moveable partitions.

2.3.3.2.4 Community

Shared learning spaces foster social interactions and support a sense of common purpose. Harrop and Turpin (2013) found that these are important for learners in their study and relaxation. Working alongside peers was considered by students as supportive and motivational with planned and unplanned conversations. Montgomery (2014) and Chan and Spodick (2014) also found that students like a study environment where they can be seen studying or see others studying as it is stimulating. Andrews et al. (2016) report that studying in the library makes students feel like they are part of a greater cause. Both social and various levels of privacy were desired by students depending on temperament and mood. Similarly, Beatty (2016) found that while only a few students at the Taylor Family Digital Library preferred isolation, most valued having other learners around as they could find help with learning or simply be motivated by seeing others working and feel part of a learning community. Nitecki and Simpson (2016) observe rightly that peer support, studying with or along, is a key aspect of student learning behaviors in libraries.

2.3.3.2.5 Retreat

The idea of retreat encompasses privacy and quiet study. Jordan and Ziebell (2009) report that students wanted more quiet study spaces when asked what the library could do to support their learning. In Harrop and Turpin (2013) home and enclosed spaces like meeting rooms were cited as places that provided privacy and no disturbance especially when working individually. Andrews et al. (2016) found that for individual study,

students needed quiet space equipped with power outlets and large work surfaces with the right chairs. Students were bothered by noise, visual distractions, quality of furniture, lighting and seeing others sleeping. Beatty (2016) also reports that a few students preferred isolation.

2.3.3.2.6 Timely

This refers to the demand on learner's time. Harrop and Turpin (2013) found that the just in time and on demand access to resources and services was of particular importance to users. Spaces can be used for quick tasks and for long periods. Quick access facilities within the spaces and long opening hours were seen as essential by students.

2.3.3.2.7 Human Factors

Human factors include the ergonomics of workspaces and other physical attributes like lighting and sound levels. Students at the Sheffield Hallam University preferred large personal work space to spread out. Some students chose relaxed seating over formal chairs. Outdoor spaces and spaces that allow views of the outside and fresh air were popular. Sound levels were found to be both a positive and negative attribute of a space depending on user expectations (Harrop & Turpin, 2013). In agreement, Hunley and Schaller (2014) observe that spaces that foster engagement tend to be visually pleasant with flexible lighting, temperature controls and access to natural light. They propose that seating and flat space design should bear in mind the full range of student needs. Where possible seating should include comfortable rolling chairs, straight-back chairs and soft seating. Andrews et al. (2016) also found that students need a variety of spaces with defined sound levels, quiet yet allowing low conversation, lack of distractions, not

overcrowded, and glass or windows for good views, to bring in nature and natural light. To improve ambience students suggested adding plants, art, desk lights as well as water features like ponds, aquarium or water wall. Both natural and richer colors were found to be popular. Furniture desires in terms of characteristics were variety, comfort, adjustability and mobility to support differing purposes. Likewise, Beatty (2016) found that students chose study spaces that were likely to have less distractions although some reported the need for distraction for better concentration or as a break while studying. Openness characterized by high ceilings, natural light and lacking isolation was also found to determine the choice of a learning space. Comfort level in terms of furniture also featured as a driver for choice of a space. Enough desk space was desired as students brought along a lot of 'stuff' and preferred spots where their space was defined either by dividers or low barriers.

2.3.3.2.8 Resources

In the report by Harrop and Turpin (2013), a majority of students considered access to technology important. Integration of a range of resources, a personal computer along with laptops, books and papers was observed. Part of the reasons given for using Learning Centers was the desire to have all learning resources within easy access. Similarly, Andrews et al. (2016) found that students desire spaces that have a host of flexible and integrated technology like whiteboards, power outlets, media walls among others. Bookshelves were seen not just as a resource but also a message. Ngoc (2015) and Beatty (2016) report that the location of a power outlet determined whether a student would consider a table or carrel a good spot.

2.3.3.2.9 Refreshment

Being able to eat and drink contributes to making a space attractive to students. Observation and student feedback as reported by Harrop and Turpin (2013) as well as Andrews et al. (2016) revealed that learners had food and/or drinks on their work spaces in the Learning Centers, computer labs and cafeterias. Access to food and drink is also considered important. Deng et al. (2017) studied library cafés situated in three universities in Asia and the USA, they state that while library cafés may not contribute directly to students' formal learning, they play an important role by providing a casual and lively social physical space that appeals to students who prefer working collaboratively, who are interested in social learning and are not easily distracted by noise. The moveable and comfortable furniture in library cafés, the availability of food and drink, as well as the proximity of library resources allows students to move through different types of learning and social networking with ease. This is in agreement with earlier reports by Waxman et al. (2007) that the café atmosphere, its convenience and the chance to interact are all important for learning although Bryant et al. (2009) do not agree that the café atmosphere is always learning friendly. Hunter and Cox (2014) found that while studying at informal learning space, students felt relaxed.

2.3.4 Learning Support Services

Supporting learning is a key role for today's university library and many such libraries provide resources and services in support of student learning. Courant et al. (2010) suggest that an academic library is now measured by the quality and range of the services it provides as opposed to the size and scope of its collection. However, Bligh (2014) observes that despite the focus of libraries on the learner, it is not easy to support the

students as they are now more diverse than ever before. Nonetheless, as the focus on learning spaces intensifies, libraries are having to increase the learning support services on offer (Holmgren & Spencer, 2014) so as to cater for more needs and a wider population. This has meant going beyond the traditional library services and co-locating other services within the library building. Massis (2010) refers to this as a ‘one-stop library’ experience with services ranging from tutoring, disability support, advising to administration. Felix (2011) points out that services within a learning space can determine the kind of experience a student will have. They provide opportunities to contribute to student engagement, better sharing of resources and ensure that the spaces are active and well utilized.

A survey main or central libraries at colleges and universities in Japan by Donkai et al. (2011) found that a majority of the libraries offered traditional learning support services like orientation, information literacy classes, inter-library loan and reservation. Only a few libraries offered innovative services such as career support, academic writing support, learning support for handicapped students and academic guidance to bolster student learning. Also, collaboration between the libraries and other departments in support of student learning was not widespread.

Services that may be offered to support faculty and student interactions can be grouped into two fundamental types; events and consultations. Events include writing and presentation clinics; software and hardware tutorials; information literacy sessions; readings and performances; as well as social events. Consultations could include research, writing or presentation consultation; tutorials; lending support; and technology

support (Felix, 2011). Farmer (2016) identifies library space as a service center where reference, writing, technology and research assistance as well as faculty development can take place.

A number of exemplary spaces in the USA that are represented not just by their physical features but also by their calendar are provided by Felix (2011). The Weigle Information Commons at the University of Pennsylvania champions community and collaboration through events, student workshops and partners like the writing center. The Learning Grid at the University of Warwick has an innovative, student-run service model that features online resources and connects to other university departments. The Scholars Commons in Strozier Library at Florida State University facilitates requests and delivery of information materials; provides media assistance; research and statistics consultations; as well as equipment checkout. Chan and Spodick (2014) state that the learning commons, e-classrooms and production studios at the Hong Kong University of Science and Technology (HKUST) library house various functions and activities including: workshops in media production, music and dance, student advising and industrial training; tutorials of sciences, languages and research; as well as shooting videos and Massive Open Online Courses for faculty and students.

An emerging area of support in academic libraries is research data management (RDM). Research data management services provided by libraries in Australia, Canada, Germany, Ireland, the Netherlands, New Zealand and the United Kingdom were found to be maturing although the roles played by librarians are more advisory and supportive than technical (Cox et al., 2017). Similarly, European libraries lean towards offering research

data services that are consultative or reference in nature as opposed to hands-on (Tenopir et al., 2017). In Spain, the provision of research support services is characterized by a historically weak link between librarians and faculty as well as a scarcity of resources. Most attention is paid to open access and not much priority is given to emerging topics like data management (Borrego & Anglada, 2018). Equally, Namuleme and Kanzira (2015) report that research support services in Ugandan academic libraries are still largely traditional with only one library offering bibliometric support. They cite limited budgets, lack of relevant skills and inadequate infrastructure as the constraining factors. In Kenya, Anduvare (2019) investigated eResearch support in private university libraries and concludes that university libraries are yet to be positioned to support research data management.

2.3.4.1 Collaboration

Despite the variety of implementation of Information and Learning Commons, challenges abound and key among them is collaboration (Hussong-Christian et al., 2010). Partnering with other student-centered initiatives on campus marks the difference between an Information Commons and a Learning Commons (Oliveira, 2017). Library spaces developed through a collaborative process and adapted to address shared needs help to facilitate a library's engagement with campus priorities (Ozburn et al. 2020). This collaboration needs to be grounded in shared values, planning and pooling of resources to fully support student learning (Lippincott, 2006). Indeed, building true partnerships would make it possible to offer services that support the discovery of information and the creation of knowledge products (Hussong-Christian et al., 2010). Libraries accrue several benefits when they engage in collaborative initiatives through multifunctional learning

spaces. For example, collaboration: broadens the library's role; enhances students' learning experience; positions the library within the wider institutional vision and mission; integrates the library services with other campus units that support student success; allows students to exercise control by being more intentional about their learning; builds synergy among the array of support units; can be more efficient and satisfying for students; and leads to creation of knowledge (Oliveira, 2017).

Campus libraries often collaborate with academic units, distance education programs, student affairs, disability services, technology support offices, advancement and research offices (Ozburn et al., 2020; Oliveira, 2017; Hutton et al., 2012). At the University of Massachusetts Amherst for example, the Technical Support Desk, Writing Center, the Reference and Research Desk, Disability Services, the Academic Advising Link, the International Programs Office and the Procrastination Station Café, work collaboratively in the Learning Commons to support student learning (Hutton et al., 2012). The Hong Kong University of Science and Technology Library, through strategic planning and promotion, successfully partners with academic departments, the office in charge of student affairs and the center of publishing technology among other campus services (Chan & Spodick, 2014). Jackson (2017) sought to find out if there is collaboration between the library and writing centers or writing tutoring services across American universities and reports that most institutions have writing tutoring services of sorts with varying levels of collaboration with their campus libraries. In this relationship, communication and planning were identified as areas needing improvement. This is in agreement with Felix (2011)'s observation that an integrated approach to designing services and spaces is lacking in higher education. Often the focus is on proportion, space

configuration, materials, furniture and the technology. When service is factored, it is considered later, individually and from a provider perspective as opposed to a user perspective.

A survey of 36 scholarship labs located in university libraries across the United States, Europe and Canada by Webb (2020) found that the design of spaces and services provided differed depending on the motivation of the creative spaces, the focus of the universities, availability of funding, and staffing. Where a university is research oriented, the spaces focus on faculty needs, data and preparation for publication. Where the focus is undergraduates, the spaces are geared more towards course support. The primary level of support being how librarians and staff interact with space users falls within the ‘doing it for people’, ‘showing people how’ and ‘doing with people’ continuum (p.36).

2.3.4.2 Skills, Competencies and Roles

A service offering that is designed to create an improved user experience means a shift in the roles, skills and knowledge of staff supporting learning spaces. The design, implementation and evaluation of services requires new skills (Felix, 2011). Libraries should rethink their roles and move towards a more participatory and collaborative approach where librarians are partners in the learning and research process (Borrego & Anglada, 2018). Librarian roles have evolved to encompass collaboration with researchers across campus through embedded librarianship (Delaney & Bates, 2018). The role of librarians is seen as changing from that of custodian to that of mediator of information. Specialist roles such as learning developers and learning technologists, which reflect coupling of traditional competencies with, among others, technology and

instruction design have been created to reflect this trend. Equally, demand for transferable skills like instruction with regard to new media and new ways of learning are on the increase (Tait et al., 2016).

Staffing models within the spaces include: single librarian where one librarian runs the space; a team of librarians and staff; decentralized where curricular faculty sometimes team up with librarians to run the space; community-led support with well-trained students and volunteers being in charge; and a mixed model where all these models are combined (Webb, 2018). Student workers, especially graduate students are likely to be used in the United States to staff scholarship centers or as technology experts that can help with projects (Webb, 2020). Technical support can be provided in libraries either through a Learning Commons with a collaborative learner-centered approach or by developing service points. Both approaches enrich learning and enhance the skill set of student workers and those being served (Elliot et al., 2018).

From the foregoing literature, it is notable that in many cases the learning support services are termed research support services. Evidently, learning support services in academic libraries are still very traditional. Many libraries are yet to make the move towards newer and innovative services that are the epitome of modern learning spaces. The literature also indicates that this move is at its infancy in the developed world while it is yet to be embraced in the developing world. Librarians in this part of the world are yet to reimagine their role as that of partnering in learning and knowledge creation instead of supporting through the provision of resources.

2.3.5 Designing Learning Spaces

Academic libraries across the world are relooking at their physical library buildings with an aim to develop modern, flexible and accessible spaces that meet the current and future needs of the campus learning communities. Library planners are expected to transform the library in innovative ways (Head, 2016). The design of learning spaces is hence taking a new form and function (Horn, 2014) premised on the current notion of learning as physically situated and the resulting re-conceptualization of the campus library as space for student-centered learning (Jamieson, 2013). Librarians and architects are continuously seeking best practices for planning and designing well-functioning learning-centered libraries (Head, 2016).

Traditionally, library building and expansion has been guided by carefully defined standards, such as an estimate of the number of volumes to be housed, the number of seats and study cubicles, the area necessary for a specified library function, and the number of librarians per students. However, advancing technologies and changing pedagogical practices have forced university libraries to shift their focus away from collections towards students. Bennett (2015) observes that since 2002, few academic libraries have made significant investments in shelving for collections except in an effort to free-up prime space for student learning. Reviewed literature on student-centered learning reveals that students approach their learning in a variety of ways and have a range of learning preferences meaning that diversity and variety is needed in spatial provisions. Various scholars have proposed approaches for transforming the traditional library into a learning or student-centered, modern facility. Also, library learning space

designing has been informed by general guidelines and frameworks meant to inspire learning space designs in higher education.

2.3.5.1 Designing Learning Spaces for Higher Education

There are numerous published examples of principles to guide the designing of learning spaces for higher education. A majority are based on Chickering and Gamson's (1987) seven principles of good practice in undergraduate education as translated into space design. These principles imply that a good learning space design should:

1. Encourage contacts between students and staff;
2. Develop reciprocity and cooperation among students;
3. Use active learning techniques;
4. Give prompt feedback;
5. Emphasize time on task;
6. Communicate high expectations;
7. Respect diverse talents and ways of learning.

A learning focused approach is provided by Oblinger (2006) who argues that learning spaces should be designed around people, support a variety of learning activities, make connections possible, accommodate information technology, be comfortable, safe and functional, and embody institutional values. Adoption of a multi-disciplinary approach and application of participatory design processes is advocated by Jamieson et al. (2005), who argue for augmenting existing designs rather than replacing by maximizing the inherent flexibility; aligning to different curricula activities; maximizing student and teacher access and use; allowing user control; bringing together previously discrete

functions; providing for multiple concurrent and consecutive use; and exploring the use of the vertical dimension of facilities.

The JISC (2009) report, also provides some advice on designing learning centers that can motivate learners, promote learning, bolster collaborative work and provide a personalized and inclusive environment. According to JISC, designers should ensure that spaces are:

- Flexible so as to accommodate current and emerging learning needs;
- Future proofed to allow repurposing and reconfiguration;
- Bold enough to go beyond established technologies and pedagogies;
- Creative as to enliven and motivate students and faculty;
- Supportive in a manner that can unleash the potential of all learners; and
- Enterprising to support a variety of purposes.

To enhance the utility, appearance and comfort of all spaces where learning takes place on the campus, Denison University, a small liberal arts college in Ohio, applied a set of design guidelines stating that learning spaces must support many styles of learning; be adaptable; be comfortable and attractive, be rich in terms of information and technological reliability; stay maintained and accessible; and have sufficient resources (Siddall, 2006). Similarly, to guide the designing or renovation of teaching and learning spaces, Finkelstein et al. (2014) based their five research-based principles on the National Survey for Student Engagement (NSSE) that is a respected indicator of student engagement used by over 1450 universities in North America. These principles state that learning spaces should encourage active engagement with content and include a range of

technologies; permit students to work individually and collaboratively; facilitate interaction between faculty and students; be consistent with the university's culture and priorities; and also fit within the larger campus context for ease of transition.

The Pedagogy-Space-Technology (PST) Framework (Radcliffe, 2009) for designing and implementing modern learning spaces acknowledges the needs of different academic disciplines; the need for unified approach; and endeavors to enable replication and application in various contexts. The framework thus, takes into account pedagogy, space and technology; and argues that the three elements, influence each other in acyclic manner where for example achieving a desired pedagogy might suggest a preferred way to arrange the shape and use of space, while a learning space irrespective of its intended use may shape what people do in it.

A more recent guide is the UK Higher Education Learning Space Toolkit (2019) which acknowledges that teaching, learning and the campus context has experienced significant change in the 21st century. The toolkit suggests that to create and develop formal and informal learning spaces that are supportive of the student experience, learning spaces should:

- Create a sense of community and encourage participation.
- Integrate and connect learning.
- Meet a range of different learning needs.
- Offer a comfortable working environment.
- Offer support.
- Make effective use of technology.

- Be inclusive and sustainable.
- Involve, inspire and motivate students.

In summary, while there exists many guidelines for designing learning spaces, literature is indicative that a learning space should make it possible for members of the learning community to connect, interact and work collaboratively or individually. It should enable and support a variety of learning styles and activities. Its design should communicate certain values, allow multiple use, accommodate technology, be comfortable and attractive yet functional. It is notable, that literature on how learning spaces are being designed on the continent is lacking.

2.3.5.2 Library Learning Space Design Frameworks and Guides

As change happens in the campus real estate, academic libraries are not left out, they must be well thought and be part of the campus-wide strategy. Library literature provides a number of guides, models and frameworks for library space designing. Harland (2011) opines that whether going by ‘information commons’, ‘learning commons’, ‘media center’ or ‘library’, what is needed is flexible space with current technology, configurable furniture, collaboration support and trained staff. Both et al. (2013) assert that academic libraries should provide a rich variety of opportunities for information access, conversation and group learning, exemplifying new pedagogies and accommodating advancing technologies. While the spaces ought to be easily adaptable to formal and informal learning, traditional reading rooms and silent study spaces should not be left out. Also, since the library is a shared neutral place on campus, it should offer communal

areas for displays, impromptu meetings and informal learning activities. Architecturally, it must fit in the unique university environment it belongs to.

A four-space model that can be actualized in the physical and cyberspace is proposed by Jochumsen et al. (2012). This conceptual model includes four spaces which should support each other to achieve the library's main goals namely: inspiration space, learning space, meeting space and performative space. Cunningham and Tabur (2012) also present a four-level model similar to Maslow's Hierarchy of needs that encompasses: access and linkages (location, zones, collection, information and network) as the most basic; followed by uses and activities (reading, writing, collaborating, furniture, tools, equipment and flexibility); comfort and image (ambience and sense of scholarship) are ranked higher; as well as sociability (communal, social, quiet, noisy, independent and group) which is at the top of the pyramid. Christoffersen (2020) built on Cunningham and Tabur's model and provides a self-analyzing hierarchical tool comprised of space ideas, guiding questions and generic cost approximations for library space renovations.

From an interior designer's point of view, design principles provided by Clugston (2013) explain that libraries should include a flexible or multi-functional space that can be reconfigured frequently to suit the changing functions and uses, ensuring that the space is fully utilized. Also, a sufficient volume of space should be provided so that users are comfortable; there should be no barrier between formal and informal spaces; equally, collaborative and social spaces should not be left out. With a focus on learning, Beard and Dale (2010) observed academic libraries in the UK and grouped user spaces into five categories that are each designed to support a different learning interest as follows: short

stay for individual information gathering; open-space that is flexible for group work; individual silent study; small-group for intentional collaborative work; and lastly, structured teaching and learning. Discussing the importance of third spaces, away from home or work, where people can relax and find rejuvenation, Waxman et al. (2007) provide guidelines for designing a library coffee shop, some of which could fit application in the library as a whole. These guidelines advise on such areas as layout, flooring, seating and tables, lighting, aroma, acoustics, views and ambience. They propose, for example that flooring should be clean and non-slip, music should be discreet, colors and textiles cozy and that seats and tables should cater for all types of users.

To create successful library spaces, Choy and Goh (2016) maintain that the spaces have to be varied to meet the changing needs of students. To serve student learning activities, Choy and Goh provided four different kinds of space in the Nanyang Technical University libraries including: collaboration space to cater for students working together; sanctuary spaces for students wanting silence away from distractions and unwanted stimuli; interaction space for students to interact with resources, services, librarians and other experts; community space for activities meant to increase the value of community like presentations, book discussions, talks and poetry reading. Gstalder (2017) agrees that library planners must consider the current and future needs of users. The traditional design that was meant to cater for storage of printed collections and accessibility by patrons in an environment that prevents mold and pests can hardly suit student independent or group study needs which are constantly changing. No wonder, Monahan (2002) advocated two design concepts: flexible space and built pedagogy. Built pedagogy is concerned with the reciprocal relationship between form and function, where space is

configured according to the intended use and communicates that suggested use. This operates within a spectrum of flexible learning space usage that ranges from disciplined use that is governed by physical characteristics of the space to autonomy through facilities that allow users to recreate the space to suit their individual needs. Flexibility encompasses such properties as fluidity, versatility, convertibility, scalability, and modifiability which allow for flows, multiple uses, adoption, expansion or contraction, and appropriation of the learning spaces.

The design principles and guidelines clearly flow from learning principles and revolve around the need to cater for student learning needs, activities and styles. There is almost a unified emphasis on comfort, collaboration, interaction as well as the social aspects of learning across the frameworks examined above. While this could signify a move away from the traditionally silent library, modern design guidelines are keen to provide for silent study, reflection, inspiration and contemplation. It is clear that there is not a single universal set of design principles but a specified set that is meant to meet the needs of a given project. While learning may be seen as universal, the approaches applied in various contexts are definitely different and thus the need to examine the context along with the users while learning from existing guidelines to come up with relevant and usable learning spaces.

2.3.5.3 Planning Library Learning Spaces

Transforming an academic library requires a holistic planning process. Crosbie and Hickey (2001) critiqued seven new and renovated libraries and provided nine factors that determined their design with the top four items reflecting a focus on a user-centered

environment: i) the growing importance of electronics; ii) the shift from exclusively individual learning to individual and collaborative learning; iii) community and institutional pride; iv) the emerging role of libraries as campus centers and information commons; v) the need for less expensive ways to store print; vi) the importance of historical materials; vii) differing concepts about staff-staff and staff-user relationships; viii) uncertainty about the future; and ix) site, budget, and design considerations.

A survey of more than 350 library renovations and new builds that took place between 1995 and 2002 as reported by Shill and Toner (2003) indicated that one of the assumptions made by the researchers was that the new library space would have more seats for library users, since for a long time, libraries had cannibalized user spaces for the growing collection. The first questions to consider when designing new or renovated learning spaces in higher education were put forth by Bennett (2007) with a focus on informal learning spaces. The six questions revolve around planning, programming, design, construction, occupancy and adaptive use. Barton (2016) referring to a learning commons model discusses key elements of the planning process which include: a shared vision, leadership, research, funding, training, assessment, and safety considerations. Choy and Goh (2016) posit that most considerations when planning library buildings revolve around understanding and predicting user needs.

It can be a daunting task to contemplate a refurbishment or building a new library, Adolphus (n.d.) advises that the planners should be aware of potential assets and make use of them. Also, they should identify any building patterns in the institution or locality and consult widely especially with users and non-users. This should lead to the development

of a list of requirements which can then be prioritized depending on what is essential and desirable. The educational experience is also seen as where to begin when designing an academic library. Wilson (2008) explaining the designing of the new Middlesex University Sheppard Library, provides a brief description of a student's typical day and how the student would use the ideal library facility. Adolphus (n.d.) concludes that the aim should be to make the library a place for socialization and study, providing for of different knowledge work types and following sound design principles with regard to lighting, flow, interior décor and accessibility.

Head (2016) studied 22 college and university library learning space projects completed between 2011 and 2016 in the US and Canada. Head reports that library projects placed a high premium on creating flexible libraries. Another shared design goal was to create spaces that supported the totality of student needs and this was manifested in building spaces to support collaborative learning, individual study, point-of-need services and the occasional classroom. Reviving underutilized space was another frequent goal. For many library projects this meant moving books that rarely circulated and increasing study carrels and open seating.

There seems to be no universally accepted approach to planning library space. What is clear is the move from focus on collections to focus on access and learning. While the designing of individual libraries ought to be guided by their mission and user needs, other core considerations include technology infusion, context, amenities and aesthetics to make sure the library is relevant, inviting and that the students are comfortable.

2.4 Chapter Summary

This chapter provides both a review of literature and a discussion of Lefebvre's theory, Production of Space, that this study used as a theoretical lens. The chapter explains how its postulates, especially the spatial triad, fit in the study of learning spaces within academic libraries. The reviewed literature reveals how the higher education landscape has evolved over time along with the design of academic libraries. Factors necessitating change in the academic library like the nature of students, their needs and preferences, technological advancements and pedagogical shifts are brought to the fore. The chapter also reviews literature on learning support services since 21st century learning spaces are integrative and service-rich. The designing of libraries is covered; specifically, trends in library space design, existing guidelines and frameworks that can be used to ensure that libraries design spaces that are relevant and usable as well as factors to consider when planning library learning spaces.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this study as explained in Chapter 1 was to assess the extent to which current academic library learning spaces in Kenya are aligned to 21st century learning. The study findings informed the development of a framework that can be used to redesign the spaces. Specifically, the study assessed the current status of library learning spaces in selected academic libraries in Kenya, explored student behaviors and preferences, and examined the learning support services provided in the learning spaces.

This chapter covers the research method and techniques that were used to undertake the study including the philosophical approaches to research; the research approach, the research design; sampling and sample size; data collection techniques and tools; as well as data analysis techniques and tools. Reliability and validity measures that were employed to ensure that research findings answer the research questions are covered. Ethical considerations applied are also discussed.

3.2 Philosophical Approaches to Research (Paradigms)

American philosopher Thomas Kuhn, 1962, first used the word paradigm to mean a philosophical way of thinking. In research the word paradigm whose etiology in Greek means pattern, is used to describe a researcher's 'worldview', which is the perspective, thinking, school of thought or set of shared beliefs that inform the meaning or interpretation of research data (Kivunja & Kuyini, 2017; Mackenzie & Knipe, 2006). The meaning of paradigm can be summarized as a set of beliefs that guide action; in a research context, these are reflected as the researcher's worldview that is made up of four

sets of philosophical beliefs: axiology or ethics, epistemology or knowledge, ontology or reality, and methodology or inquiry. A paradigm hence implies a pattern, structure and frame of reference or system of scientific and academic ideas, values and assumptions that inform how a group operates (Saunders et al., 2016; Denzin & Lincoln, 2005).

Paradigms are important in research since the beliefs and dictates they provide influence the choice of what should be studied, how it should be studied, and how the findings should be interpreted. Creswell (2014) posits that any broad research approach involves the intersection of philosophy, research approaches and specific methods. Therefore, the researcher needs to identify and think through the philosophical worldviews s/he brings to the study, the related research design and the methods and techniques of research that translate the approach into practice. It is expected that a researcher upholds the assumptions, beliefs, norms and values of the paradigm in which s/he locates his/her study.

Paradigmatic view on research methods has been evolving. American methodologists Lincoln and Guba (1985) first formulated a paradigm contrast table where they presented two paradigms: positivism and constructivism. Over a period of 20 years, the paradigm contrast tables evolved such that the initial two-column paradigm table: positivism, constructivism; became a four-column table: positivism, postpositivism, critical theory and constructivism in Guba and Lincoln (1994) and then a five-column table: positivism, postpositivism, critical theory, constructivism, and participatory in (Guba & Lincoln, 2005). Similarly, Teddlie and Tashakkori (1998) in their early work compared four paradigms: positivism, post-positivism, pragmatism, and constructivism and later on in

Tashakkori and Teddlie (2010) brought in a fifth paradigm, the transformative perspective and linked it to mixed research. Bryman (2012) provides that there are four theoretical perspectives: positivism, interpretivism, objectivism and constructionism. Creswell and Creswell (2018) also highlight four worldviews: post positivism, constructivism, transformative and pragmatism. Researchers (Denzin & Lincoln, 2011; Flick, 2007) argue that quantitative and qualitative approaches to research extend into different philosophical research paradigms. Maxwell and Mittapalli (2010) observe that there is a widespread view that the philosophical partner of qualitative research is constructivism or interpretivism and for quantitative research, post positivism, while transformative and pragmatism have been promoted as the appropriate philosophical stances for a mixed methods researcher since they open the door to multiple methods, varying assumptions as well as different techniques and procedures for data collection and analysis. This study sought meanings and understandings, which call for an interpretivist philosophical stance and a qualitative approach.

3.2.1 Interpretivism

Interpretivism is mainly associated with Max Weber and Alfred Schutz (Bryman, 2012). Interpretivists state that reality is multi-layered and complex. They believe that people creatively and actively construct their social reality. That social reality should be studied in the natural world, through the eyes of the participants, without the intervention of the researcher. This is unlike positivists who believe that social reality is external to individuals and that it is possible to use scientific methods to analyze the social world (Cohen et al., 2007). Interpretivism asserts that humans and physical phenomena are different, humans create meanings, therefore, they cannot be studied in the same way as

physical phenomena. Interpretivists believe in multiple realities and that reality is socially constructed. Epistemologically, they assume a subjectivist view where subjective meanings and subjective interpretations are of great importance just like transformists who appreciate a close collaboration between the researcher and the study participant. For positivists the knower and the objects to be known are different entities with neither exerting influence on the other. Pragmatists focus on reconciling both objectivism and subjectivism (Saunders et al., 2016; Crotty, 1998).

Unlike the positivist paradigm where questions and hypotheses could be developed using existing theory and then tested and verified by experiments, theory in an interpretivist paradigm should generate from the data and not precede it. Also, interpretivist researchers see themselves as participants in the situation under study, they are not removed like positivist researchers who try to remain neutral and detached from their research and data in order to avoid influencing the results (Creswell, 2014). Morgan (2007) posits that research guided by interpretivism is often characterized by the following:

- i. an admission that the social world cannot be understood from the standpoint of an individual;
- ii. a belief that there are multiple realities and that these realities are socially constructed;
- iii. an acknowledgement of the unavoidable interaction between the researcher and the research participants;
- iv. an appreciation of context as vital for knowledge and knowing;

- v. the belief that the findings create knowledge that can be value laden and that the values need to be made explicit;
- vi. the need to understand the individual rather than generalizations;
- vii. a belief that causes and effects are reciprocal; and
- viii. an assumption that any systematic pursuit of understanding needs to take contextual factors into consideration.

Interpretivist research is aimed at creating new, richer understandings, meanings and interpretations of social worlds and contexts (Saunders et al. 2016). Given the need for rich in-depth data by the study at hand in order to understand and evaluate library learning spaces along with student space behaviors and preferences, this study found adopting an interpretivist stance most appropriate. Libraries exist in a social-economic setup or context; their activities and services are influenced by this context and it was important to study them within this context. Specifically, the various strands of the practice of interpretivism were applied in this study. A phenomenologist approach which Saunders et al. (2016) define as the study of existence or participants lived experience, was used in trying to understand the students' experiences in using library spaces, their behaviors in the spaces and their preferences and desires as far as library learning spaces are concerned. A hermeneutics view which focuses on analyzing cultural artefacts like texts, symbols, stories, images was applied in trying to establish the physical status of library learning spaces especially their attributes and affordances. Lastly, a symbolic interactionist view in which observation and analysis of social interaction such as conversations, meetings, teamwork is the focus was applied when investigating the nature and value of the learning support services provided in the learning spaces.

3.3 Research Approach

Research approach is defined by Leedy and Ormrod (2013) as a plan for a study, providing the overall framework for collecting data, that links the research questions and the implementation of the research strategy. For Creswell and Creswell (2018) research approaches refer to the research plans and procedures that move the research from broad assumptions to refined methods of data collection, analysis and interpretation. More elaborately, Saunders et al. (2016) posit that a research approach is the general strategy of how a researcher will go about answering the stated research questions. This strategy will contain clear objectives, specify the sources from which the researcher intends to collect data, explain how data will be collected and analyzed without leaving out a discussion on ethical issues and constraints that the researcher may encounter

Three research approaches 1) quantitative 2) qualitative and 3) mixed methods are advanced by many researchers (Bryman, 2012; Creswell, 2014; Saunders et al., 2016; Creswell & Creswell, 2018). To differentiate between quantitative research and qualitative research, the nature of data, numeric data or non-numeric data is used where 'quantitative' is synonymous with any data collection technique or data analysis procedure that generates or uses numerical data while 'qualitative' implies any data collection technique or data analysis procedure that generates or uses non-numerical data (Saunders et al. 2016). Creswell and Creswell (2018) argue that qualitative and quantitative approaches should not be seen as definite, distinct categories or dichotomies. Instead, they stand at different ends on a continuum with mixed methods research residing in the middle of this continuum as it applies elements of both qualitative and quantitative approaches.

Quantitative research is largely concerned with pre-determined variables, specifically the relations between variables. These variables, are measured using standardized instruments, so that numerical data can be analyzed using a range of statistical and graphical procedures. Qualitative design on the other hand is used by researchers to explore and understand the meaning people attribute to human and social problems. It involves a research process that is iterative; questions and procedures keep developing or emerging, with non-standardized data collection happening in a participant's natural setting and data analysis building inductively from specific to general themes. Since mixed methods combines quantitative and qualitative designs in a variety of ways, it is assumed to offer researchers additional understanding beyond the information provided by either the quantitative or qualitative data alone (Aspers & Corte, 2019; Creswell & Creswell, 2018).

3.3.1 Choice of a Research Approach

Creswell and Creswell (2018) explain that the choice of a research approach is informed by the philosophical assumptions the researcher brings to the study; procedures of inquiry and specific research methods or techniques of data collection, analysis, and interpretation. Other factors that influence this choice include the nature of the research problem, the researchers' personal experiences, and the study audiences. As explained earlier in this chapter, this study was based in university libraries. The researcher, guided by the notion that space is not a container but a social construct that is continuously produced by human activity and has an effect on human action wished to gain an understanding of the nature of academic library learning spaces, establish how student behaviors and preferences influence and are influenced by these spaces, as well as how

student learning is supported in the spaces. This study adopted the qualitative research approach since the researcher sought to explore, capture and describe the lived experience of students in the library learning spaces. A deep understanding was sought since the information or data collected was supposed to inform the development of a re/design framework that is user-centered, current and aligning well to the needs of learners and learning today.

3.3.2 Qualitative Research Approach

Many researchers contend that there is no agreed-upon, universally accepted definition for the concept of qualitative research (Fidel, 1993). Denzin and Lincoln (2005) suggest that qualitative research situates and locates the researcher in the real world of the research subjects and consists of a set of interpretive and material practices that makes the world visible. Using common elements of qualitative research, Mason (2018) provides a simple explanation of qualitative research as grounded in a philosophical position that is broadly 'interpretivist', based on data generation methods that are both flexible and sensitive to the social context and further points out that its methods for data analysis, explanation and argument building involve understanding complexity, detail and context.

A more elaborate explanation of what qualitative research entails is given by Taylor et al. (2015) who posit that qualitative methods are more than a set of data-gathering techniques, qualitative research is a way of approaching the empirical world in which qualitative researchers:

- i. Are concerned with the meaning people attach to things in their lives.

- ii. Develop concepts, insights and understandings from patterns in the data collected as opposed to using the data to assess preconceived ideas.
- iii. Study people in contexts of their past and current situations. By so doing, the researcher looks at the setting and people holistically.
- iv. Are interested in how people think and act in their everyday lives. In participant observation for example, they try and blend in. Equally in qualitative interviewing, researchers fashion the interview like a normal conversation.
- v. Consider all perspectives worthy of study. The assumption that the viewpoints of powerful people are more valid than those of the powerless is rejected.
- vi. Believe there is something to be learned in all settings and groups. Nothing is too mundane or trivial to be studied.
- vii. See qualitative research as a craft. There are no refined standards like for other research approaches.

Qualitative research is also defined in comparison to quantitative research. Vanderstoep and Johnston (2009) state that, qualitative and quantitative approaches vary in purpose, focus, method, and criteria for truth. They explain that the purpose of qualitative research is more descriptive than predictive, its focus is to lend voice to the marginalized people of a culture, its methods are inductive while the quantitative ones are deductive and lastly, while quantitative methods use statistics and replication as standards of proof, good qualitative analysis provide novel, unique, engaging, logical and supported interpretations of text. Similarly, Creswell and Creswell (2018) note that while quantitative data records facts about a group of people, qualitative data gives insights into

their views, reasons, motivations and aspirations. Such was the nature of this study; the researcher sought meanings and explanations.

The aforementioned definitions and suggestions infer that qualitative research approaches apply techniques that enable the researchers to understand people and the social contexts within which they live. Various scholars (Domegan & Fleming, 2007; Henning, 2004; Denzin & Lincoln, 2003) argue that human learning is best researched using qualitative data. This study was about student learning and suitability of library learning spaces. Its aim was to propose what can be done to make the spaces suitable for learners, meaning that the socio-cultural issues and their impact on the said learners needed to be understood. The essential processes in this study included observing, investigating and documenting in detail, the unique learning needs, styles, behaviors and preferences of students in academic library learning spaces. Working with small samples, the researcher studied students within the library spaces as they engaged in their activities so as to become familiar with the spaces under study and to gain a deep understanding of what students and librarians think about the learning spaces. This allowed thick narrative descriptions which the researcher heavily depended on to evaluate the suitability of the learning spaces provided. An inductive analysis of opinions and views of both librarians and students with regard to ideal library learning spaces helped the researcher to construct meaning of the phenomena. Kaplan and Maxwell (1994) posit that quantification of textual data loses the goal of understanding a phenomenon from a participant's view and its context.

However, while undertaking research, the researcher was aware that qualitative research, as an approach acknowledges the researcher's subjectivity and requires that the "biases, motivations, interests or perspectives of the inquirer" are identified and made explicit throughout the study (Lincoln & Guba, 1985: p. 290). Other weaknesses of qualitative research that the researcher considered throughout the study include the possibility of: researcher bias biasing the design of the study or entering into data collection; participants not being equally credible; some participants being previously influenced and affecting the outcome of the study; background information missing; a study group not being representative of the larger population; biased analysis of observations; any group that is studied being altered to some degree by the very presence of the researcher; taking time to build trust with participants that facilitates full and honest self-representation; and that short term observational studies are at a particular disadvantage where trust building is concerned.

3.4 Research Design

Creswell and Creswell (2018) together with other scholars (Creswell, 2014; Bryman, 2012; Vanderstoep & Johnston, 2009) present research designs as follows: 1) Qualitative research strategies - ethnography, phenomenology, case study, Grounded Theory, and Narrative research. 2) Quantitative research strategies – experimental, non-experimental and longitudinal. 3) Mixed methods research strategies – convergent, explanatory sequential, exploratory sequential, and complex designs with embedded core designs. Since this study was guided by the qualitative research approach, the researcher provides an overview of its methods then later zeros-in on case study as the method that this study employed.

3.4.1 Overview of Qualitative Research Designs

Ethnography literary means a written account of a people and emanates from anthropology and sociology; it is the earliest qualitative research strategy and is used to study the culture or social world of a group of people. An ethnographic researcher studies the shared patterns of behavior, language, and actions of an intact cultural group in a natural context over a long period of time. In Grounded Theory the researcher derives a general, abstract theory of a process, action, or interaction founded in the views of participants. This is an inductive process involving multiple sets of data and the refinement and interrelationship of categories of information. Grounded Theory is used to develop theoretical interpretations of social interactions and processes in all manner of contexts. Phenomenology and narrative research focus on the lives of individuals as opposed to groups or contexts. Whereas in phenomenology a researcher is interested in a particular phenomenon in an individual's life and the meanings individuals construct thereof with all judgements suspended, narrative research combines views from the researcher's life and those from an individual's life into a narrative chronology (Creswell & Creswell, 2018; Saunders et al., 2016; Vanderstoep & Johnston, 2009).

3.4.2 Case Study

Case study has been defined by many scholars. Stake (1995) drawing from naturalistic, holistic, ethnographic, phenomenological and biographic research methods explains case study as coming to an understanding of the particularity and complexity of a single case within important circumstances. Yin (2009) describes a case study as an empirical enquiry that is used when a researcher wants to gain an in-depth understanding of a real-life phenomenon including the context pertinent to that phenomenon. Creswell (2014)

notes that a case could be a program, event, activity, a process, or one or more individuals bounded by time and activity. In this study, a case is an academic library and as explained by Bryman (2012) the researcher was interested in intricacies and the specific nature of the case libraries. The interrelatedness of different features - the physical learning spaces, the learners and their activities within the space together with the support available to them while in the spaces was of emphasis (Bazeley, 2013).

Various categorizations of case study have been presented in literature. Merriam (1998) characterizes case study types per their discipline, framework and by the nature of how they are written up – descriptive, interpretative, and evaluative. Stake (1995) discusses three types of case study – intrinsic, instrumental and collective. This study adopted a collective or multiple-case study. According to Mills et al. (2010) this involves an extensive study of a number of carefully selected cases so as to develop an enhanced understanding of an issue. The researcher chose both negative and positive cases with an aim to examine variations and differences between the cases. This allowed the researcher to probe processes and outcomes across the mix of cases and to identifying how individual libraries might be affected by different environments hence develop a rich understanding of library learning spaces.

According to Yin (2014) using case study is preferred when the research interest is contemporary events. This study looked at library learning spaces in the 21st century, with specific reference to academic libraries in Kenya. Application of a case study design in this study was beneficial because:

- 1) Case study is an intensive study and it is possible to get a complete picture of a situation or a phenomenon, it can obtain detailed and relevant data (Tsang, 2014). This study sought an elaborate picture of the physical learning spaces.
- 2) By studying individual cases in-depth it was possible to find information that was not anticipated from the start. Data gathered from the cases made a contribution to what is known about academic library learning spaces in Kenya.
- 3) Case study research provides great strength in investigating entities consisting of multiple features and causes of potential importance (Yin, 2014). There is great variety in the design of modern library learning spaces and this was explored.
- 4) They allow one to get as close to the area of interest as possible, through direct observation in the natural environment and access to the subjective factors (Creswell, 2014). The researcher closely studied the students in their natural environment.
- 5) They are able to handle and combine multiple kinds of data collection methods (Yin, 2014). Apart from direct observation, this study employed interviews to collect data from students and librarians.

Most critics indicate that the case study's theory, reliability, and validity are at issue putting to question the very status of case study as a scientific method (Flyvbjerg, 2011). Additionally, findings by case studies cannot be confirmed or denied according to Murphy (2014). The researcher was alive to these lurking reservations inherent in case studies and exercised caution. It is important to note that the choice of case study as a research strategy for this study was not aimed at making generalizations, testing hypotheses or building theory. While a theory was chosen to guide this study, the

researcher was basically interested in-depth data that could help to analyze and draw conclusions about library learning spaces.

3.5 Study Population and Sample

The first step in sample selection for research is to identify the population. Burns (2000) describes a population as the totality of people, objects or events which have at least one characteristic in common. Bryman (2012) refers to population as the ‘universe of units from which a sample is to be selected’ (p.714). The population for this study was academic libraries in Kenya. Within the libraries, the unit of analysis was the physical learning spaces along with student library users who are the main expected beneficiaries of the spaces and space services. University Librarians, Users Services Librarians and Instruction Librarians formed part of this unit of analysis as they are involved in the planning and implementing of library learning spaces together with learning support services.

3.5.1 Sampling Technique

A sample is any part of the population. Sampling hence involves taking a part of the population and the first task of this process is identifying and precisely defining the population that is to be sampled (Burns, 2000). Saunders et al. (2016) discuss two main sampling techniques: probability and non-probability. On one hand, in probability samples, the chance of each case being selected from the target population is known and equal for all cases. This makes it possible to make statistical inferences from the sample about a population to answer research questions and meet research objectives. For this reason, probability sampling is largely linked with survey and experiment research

strategies. On the other hand, with non-probability samples, the probability of each case being selected from the target population is not known; this makes it impossible to answer research questions or objectives that infer statistically to the characteristics of the target population.

In case study research, Mills et al. (2010) observe that sampling is complex. There are many varying sampling strategies and researchers are generally in agreement that the objective of a research study should guide the choice of a case. Through a review of literature Mills et al. (2010) report that Michael Patton identified 18 sampling strategies that can be used to select information rich cases, two of these are random while the rest are purposive, and recommends purposive sampling. Bryman (2012) agrees that in qualitative research sampling revolves around purposive sampling while in quantitative research it tends toward probability sampling. This study employed purposive sampling to select the cases and the units of analysis.

3.5.1.1 Purposive Sampling

Purposive sampling involves selecting units that have direct reference to the research questions. Bryman (2012) describes purposive sampling as a non-probability form of sampling whose goal is to sample cases in a strategic manner so that the sampled are relevant to the stated research questions. Similarly, Yin (2014) suggests that if there is access to more than one case, a researcher should choose cases which highlight his or her research questions. Flick (2014) also indicates that the idea behind purposive sampling is to select instances that are information-rich with an aim to answer research questions. What is considered as information-rich, therefore, depends on the research questions and

the goal of the study. Mills et al. (2010) explain that purposeful sampling is an umbrella term that covers both theoretical and selective sampling techniques. Theoretical sampling is where sampling is done on the basis of emerging concepts as field work progresses. Selective sampling requires that a decision is made before the study begins using a set of criteria. Mills et al. (2010) further observe that adequacy in case study sampling is relative and that in the multi-case design, there are no precise rules regarding the number of cases that should be included. The number of cases selected is dependent on how rich or complex a single case is. Too many cases could mean greater breadth, thinner data and loss of depth.

This study employed purposive sampling because of the qualitative nature of the research and applied an information-oriented sampling strategy to select cases. In conformity with Bryman (2012) this strategy ensured that variety was achieved in the resulting sample. The selection of cases thus depended on the amount and quality of information that the case was expected to generate. Bryman explains further that when sampling for multiple case studies there is sampling for homogeneity and sampling for heterogeneity. To achieve these two aspects, this study applied these criteria in the selection:

- 1) Potential of the library to provide current information due to its commitment to stay up to date.
- 2) Variety of situations by including libraries in both private and public universities running both undergraduate and graduate programs.
- 3) Variety of scenarios by inclusion of libraries using new or old library buildings to enable the learners to obtain deep and diversified information.

- 4) Possibility of access and cooperation from librarians due to established networks.

The cases studied include:

1. Egerton University Library – It was of interest since it is set in one of the oldest public universities located in the country side. The library system comprises nine libraries found in the main campus and beyond. The main library building was established in 1939 and is expected to have changed over time in order to stay current. It serves a big number of students from a variety of disciplines so variety was expected in its space provisions and services.
2. Catholic University of East Africa’s Bishop McCauley Memorial Library – This library suited this study as it is set in the biggest and most established faith-based private universities in Kenya offering a variety of both undergraduate and graduate programs. The library building is new, launched in 2012 and expected to be well aligned to the needs of the millennium.
3. United States International University – Africa’s Library – This library is set in the oldest private university in Kenya. The university is medium-sized in terms of student numbers and range of academic programs. It enjoys dual accreditation – Kenyan and American. Approaches to teaching and learning are largely American. The library building is fairly new, launched in 2008, a demonstration that it is committed to staying current.
4. University of Nairobi’s Jomo Kenyatta Memorial Library – University of Nairobi is the oldest university in Kenya. Its library was of interest being the oldest and operating from an old building – 1970. It serves a big number of students from the

widest variety of academic programs. The university is highly ranked and its commitment to staying current is not in doubt.

This study looked at library learning spaces together with the behavior and preferences of students regarding these spaces. Hence, students in these universities formed the population of the study. Since not all the students use library services, the study focused on student library users. Library staff working in these universities were also part of the population since they are direct providers of space services including learning support services. According to Bryman (2012) there are two levels of purposive sampling, sampling of context and sampling of participants. Equally, this study applied two levels of sampling, cases (the academic libraries) and participants (students and librarians). To generate a sample within the identified population of students and librarians, the study applied the key-informant approach and convenience sampling. Students using the learning spaces at the time of the study were targeted. Views of University Librarians were sought since they are involved in making key decisions about library policies and services. All the four were targeted. Librarians heading or managing the User Services section were also targeted as they are involved in the designing and day-to-day running of learning spaces in the library. Librarians in charge of user instruction or training were targeted since they are key in the design and implementation of learning support services. As such, 17 librarians who were considered key informants participated in this study; four being university librarians and 13 being heads of user service sections or working as in-charge of referencing and instruction.

3.5.2 Sample Size

One of the problems qualitative researchers face is establishing at the outset how many people will be interviewed. Bryman (2012) acknowledges that it is impossible to determine the number of people that will be interviewed before theoretical saturation is reached. Warren (2002) suggests that the least number of interviews needed for a qualitative study to be published is between twenty and thirty. Gerson and Horowitz (2002) counter this proposition by pointing out that less than 60 interviews are too few to provide authentic conclusions and more than 150 would produce too much data for effective analysis. A more recent analysis by Guetterman (2015) found that in case study research, the number of cases ranged from one to 8 while the number of participants or observations was between one and 700. Given the range of opinion in terms of suitable sample size and Bryman (2012)'s suggestion that in purposive sampling the size of sample is likely to vary from situation to situation, this study used theoretical saturation as the criterion sample size. The main idea behind theoretical saturation is that one has to keep sampling until no new or relevant data seems to emerge, a category is well developed, or until the relationships among the categories are well established (Strauss & Corbin, 1998). The researcher sampled student library users by an iterative approach, moving forwards and backwards between sampling and theoretical reflection until theoretical saturation was reached. The point of theoretical saturation varied across the cases; the highest was 22, followed by 20, then 17 and lowest was 15. 74 students in total were interviewed.

3.6 Data Collection Techniques and Tools

A number of steps were involved in data collection. Creswell and Creswell (2018) explain that setting the boundaries for the study, sampling and recruitment, collecting information, and coming up with a protocol for recording information are key steps in data collection. Shanks and Bekmamedova, (2018) observe that efficient and effective data collection especially for case study requires careful planning. The data needs to be organized and documented as it is collected. This section discusses the specific techniques and tools that were used to collect, organize and document data for this study. The techniques that were used to do piloting are also outlined.

3.6.1 Data Collection Techniques

Using a variety of data collection techniques and sources helps to strengthen the authenticity of the findings and makes it possible to include many interpretations and meanings when analyzing data (Flick, 2014). Yin (2014) states that in case study research, multiple data collection techniques are used and data is collected from many sources. Data collection techniques include interviews, observations (direct and participant), questionnaires and relevant documents.

Interviewing could be the most widely used method in qualitative research since it is flexible and the researcher is interested in detailed responses (Bryman, 2012). Documents for qualitative data could range from emails, personal records like diaries and notes, to formal documents like proposals, progress reports and internal records. In case study, such documents can be used to corroborate information gathered from other sources (Yin, 2014). The nature of this study was such that an in-depth understanding of library

learning spaces was sought. A good understanding of the setting and context was important in explaining the 'hows' and 'whys' of student behaviors, preferences and services provided in the spaces. This study, therefore, employed interview and observation as data collection techniques for the reasons explained in the next section.

3.6.1.1 Interview

The purpose of interviewing is to allow the researcher to get into the other person's perspective. Qualitative interviewing assumes that the view of others is meaningful, knowable and can be made explicit (Patton, 2015). There are three major types of interviews used in research: structured, semi-structured and unstructured. Structured interviews use a predetermined and standardized set of questions (Saunders et al., 2016). Qualitative interviews are usually semi-structured, unstructured or intensive and take place in interpretivist frameworks (Williamson, 2018). In semi-structured interviews, the researcher has a list of themes or fairly specific topics to be covered, often referred to as an interview guide. To the contrary in unstructured interviews, the researcher uses a brief set of prompts to help him or her to deal with a range of topics (Bryman, 2012). This study used semi-structured interviews to collect data from students and librarians in the case libraries. As explained by Saunders et al. (2016), semi-structured interviews were useful since this research had an exploratory element. Equally, the explanatory elements in the study benefitted from semi-structured interviews as the researcher was able to infer causal relationships between variables. The researcher needed to understand the reasons for the decisions, attitudes and opinions research participants have taken, and the semi-structured interview provided the opportunity to probe answers, to explain or build on participant responses. Another reason for preferring this type of interviews as stated by

Bryman (2012) is that in a multiple case study, semi-structured interviews ensure cross-case comparability.

Patton (2015) argues that the interviewer's skills can and do affect the quality of responses. Consequently, the interviewer purposed to ask open-ended questions, to be clear, to listen, probe where necessary, observe, to be both empathic and neutral, guide the interviewee through the interview, to be flexible and present throughout the interview. As indicated by Williamson (2018) for a successful interview, the researcher rmade effort exercise objectivity and persuasiveness.

3.6.1.2 Observation

When making observations, social scientists aim to gather information of groups and people in their everyday lives. Physical and social proximity is essential, thus, an observer will try to create and sustain relations with the people in the setting and get as close as possible to their activities and experiences (Wästerfors, 2018). Observation involves viewing, recording, describing, analyzing and interpreting people's lives (Saunders et al., 2016). Observational data is meant to describe in depth and detail the setting, the activities, the people and the meanings of what was observed from the viewpoints of those observed. The data should be accurate, factual, thorough and free from irrelevant minutiae and trivia (Patton, 2015).

There are four approaches to observation, two are traditional: participant observation and structured observation, while the other two are technology-mediated: internet-mediated observation and videography (Saunders et al., 2016). Kawulich (2012) provides that in participant observation the researcher is in the setting as an observer and a participant;

and in direct observation the researcher observes without interacting with the people or objects in the setting. Although participant observation provides the researcher an opportunity for a real experience, it is time consuming, demanding and has a high level of role conflict. For these reasons, the researcher chose to apply direct observation to collect information about the physical status of library learning spaces and the activities as well as behaviors of student library users.

As a complete observer, the researcher kept a distance so as not to influence the observed (Flick, 2006). Through this kind of observation, firsthand experience with the learning spaces and student library users was obtained. The researcher remained open, discovery-oriented and inductive; s/he was careful not to rely on prior conceptualizations of the spaces and the users so as to see things that often escape awareness among people in the learning spaces, discover things that no one has paid attention to and things that students would be unwilling to talk about in an interview (Patton, 2015).

Observation methods are often seen as a way of getting around the problems inherent in interview methods and obtaining data that is more objective. However, there are inherent weaknesses in observation like the possibility of quality deterioration where activities are complex, possible inclusion of infrequent events and the fact that observations are subject to evaluation, interpretation and introducing bias to the process (Dunckel, 2001). Also, in as much as covert observations have a higher chance of capturing what is really happening than overt observations where the people in the setting know that they are being studied, covert observations raise ethical and morality concerns, thus, this study

applied complete disclosure in direct observation (Patton, 2015) and stayed alive to the shortcomings related to observation.

3.6.2 Data Collection Tools

Before commencing field work, qualitative researchers plan how data will be recorded (Creswell & Creswell, 2018). This section identifies and discusses two data collection tools that were used in line with the two data collection techniques: interview and observation, discussed in the preceding section.

3.6.2.1 Interview Guide

According to Bryman (2012) the idea of an interview guide is much less specific compared to the structured interview schedule. It is actually a short list of themes/topics to be covered or questions to be asked in a semi-structured interview. Just as suggested by Roulston and Choi (2018) the researcher considered the topics of talk, the order of questions, and even suggested potential follow-up topics when formulating the interview guides. Bryman (2012) adds that the researcher should use the right level of language, avoid leading questions, and remember to record both general (name, gender) and specific (topical) information. In line with Patton (2015) interview guides were prepared to ensure that the same basic lines of inquiry were pursued in this study. The guides helped the researcher to make good use of the limited amount of time, to be systematic and comprehensive by determining in advance the issues that were to be explored.

For this study, three sets of interview schedules were used. Two guided the interview with librarians in the case libraries while one guided the interviewing of students. Of the two, one guide was used with University Librarians as their positions and roles allow

them to understand and provide leadership in how library learning spaces are structured and rolled out. They are often privy to the historical and policy aspects of the spaces together with the design and implementation of learning support services provided in the spaces. The second interview guide was for the interview with librarians in charge of user services and those responsible for instruction. These two categories of librarians play the roles of devising and implementing space arrangements, activities and services. They are also key in the designing of policies, plans and activities that relate to library learning spaces. Since the study sought to understand student behaviors and preferences, another interview schedule was used to guide data collection from students. The study, as mentioned earlier, targeted students using the library spaces and services at the time of the study.

3.6.2.2 Observation Checklist

A description of how a researcher should go about conducting observations is given by Merriam (1998). One should begin by drawing a map of the setting and describing it and then start recording what can be seen with particular attention to the aspects that will provide information related to the topic under study. It is recommended that the researcher captures as much detail as possible and that photographs could help the researcher to remember the details later. Kawulich (2012) states that to collect data in an organized manner, the researcher will need to develop an observation guide. An observation guide may use time sampling approach to capture what is happening periodically, an event sampling approach to capture certain events that happen in the social setting or a checklist by listing the possible activities one may observe in a

particular setting. Frequency counts and rating scales could also be used to record the degree or frequency of some activity.

In this study, the researcher used two observation checklists to guide observation and document what is observed. Learning spaces in the case libraries were mapped and observed at different times of the day for a period of four days. The aim was to record in as much detail as possible the behavior of the participants so that the researcher can develop a narrative account of the behavior of the students in the spaces. Another checklist was used to assess the physical library spaces, their features and attributes for comparison with ideal library learning spaces as articulated in reviewed literature and with data collected from students. As advised by Bryman (2012) while preparing the observation schedule the researcher ensured that: 1) there was clear focus so that the observer knew who or what was to be observed and which aspects of the learning spaces were to be recorded; 2) the forms taken by any category of behavior were mutually exclusive and inclusive; 3) the recording system was easy to operate; and 4) clear guidelines were provided so that the recording was uniform.

3.7 Piloting

It is always important to conduct a pilot study before administering data collection tools. This was done to ensure that the questions operate well and that the whole research instrument works well (Bryman, 2012). A pilot study can be described as a small-scale methodological test that is conducted in preparation for the main study. Its intention is to check that the proposed methods and ideas are practically applicable. It is beneficial to the researcher as it provides him/her an opportunity to adjust and revise the main study

(Kim, 2011). It involves simulating the data collection process on a small scale to identify practical problems with regard to data collection instruments and the process (Brown et al, 2008). In this study, piloting helped the researcher to get an idea of fieldwork, revise and adjust the interview guides and the observation checklists as well as improve the data collection procedure. The problems encountered while conducting the pilot study were considered and solutions identified before the main study.

Patton (2015) suggests that selection of a pilot case study can be guided by convenience, accessibility and geographical proximity. This study was piloted at the USIU-Africa Library as it was part of the intended targeted population. Also, it was convenient, being the researcher's place of work, with ready networks and accessibility. The choice of the pretest participants was purposive, determined by convenience, availability and the roles played in the library. Librarians and students were targeted. The physical learning spaces were also a point of focus. The researcher was careful not to include the pre-test participants in the main study. The observation checklists were found to be efficient in collecting the desired data, thus no changes were made. However, the following changes were made to interview guides:

1. The order of questions was changed to achieve a more logical order;
2. Questions that seemed to elicit the same responses were merged to reduce repetitions; and
3. Questions which needed a lot of explanations by the interviewer were rephrased for clarity.

The resulting interview guides for University Librarians (Appendix 1), User Services Librarians (Appendix 2) and Student Library Users (Appendix 3) are included in the Appendices.

3.8 Data Analysis

Data analysis in a qualitative inquiry can be focused on a number of aims. It can be aimed at describing a phenomenon or seeking explanations to develop a theory from the phenomenon under study. It is defined as interpreting and classifying linguistic or visual material in search of explicit or implicit meanings. It combines rough analysis which includes overview, summaries and condensations with detailed analysis which has to do with development of categories (Fick, 2014). In line with Patton (2015) who declares that ‘qualitative analysis transforms data into findings’ (p. 716), three things happened to data collected through this inquiry: data was organized; data was reduced through summarizing and categorizing; also, patterns and themes were determined and linked.

Since detailed data analysis is preceded by some preparation and organization, the researcher first documented the collected data as per the steps provided by Flick (2014): i) data was recorded by use of recording devices and field notes, ii) transcription was then used to edit data, making sure that only what was required for the research question was transcribed, iii) the transcription was done in a manner that is specific so as to construct a new reality and iv) a systematic way of managing data was developed.

When deciding on how to analyze data, Flick (2014) observes that there are methods of qualitative data analysis which are widely applicable and there are those which are developed for specific types of data. Meaning that the starting point can be the methods

of analysis or the particular form of data. Flick further provides two groups of qualitative analytic methods. The first set is made up of methods which focus on the content of statements solicited from interviews or a focus group and these include Grounded Theory, thematic analysis and qualitative content analysis. The second set of methods is comprised of approaches that focus on 'how something is said in addition to the content of what is said' (p. 524). These include conversation analysis, discourse analysis and hermeneutic analysis. Saunders et al. (2016) also discuss these methods and include template analysis, explanation building and testing, as other approaches to qualitative analysis.

Guided by Flick (2014) and the nature of data that was collected by this study, the researcher's interest was in techniques that focus on contents of statements – Grounded Theory, Thematic Analysis and Qualitative Content Analysis. Grounded Theory is widely used and can be defined as a research approach where both data collection and data analysis are concurrent, informing each other so as to construct theories of the research phenomenon (Thornberg & Charmaz, 2014). It avoids the use of priori codes derived from existing theory, instead, it commences inductively, developing codes from the data. Similarly, thematic analysis is considered a foundational approach to analyzing qualitative data (Braun & Clarke, 2006). Its purpose is to search for themes or patterns as they occur across data sets like in the case of a series of interviews. Just like in Grounded Theory, a researcher has to code his or her qualitative data to identify themes and patterns for further analysis with respect to the research questions. The central feature in qualitative content analysis is that it uses categories that are derived from theoretical models and brought to the empirical material with an aim to reduce the material (Flick,

2014). Given the nature of this study, the research questions and the kind of data collected, the researcher considered thematic analysis and content analysis as the most appropriate techniques to organize, accommodate and make meaning of the data that was collected from interviews and observations. The researcher also utilized computer-assisted data management and analysis systems. Below is an explanation of how the two approaches were applied in this study.

3.8.1 Thematic Analysis

As stated above, thematic analysis is a generic approach to qualitative data analysis that involves coding to identify themes or patterns for further analysis. It is a standalone analytic technique that is not part of a wider methodological approach. Thematic analysis offered the researcher a systematic yet flexible manner to analyze data. It was useful in comprehending the data; integrating related data drawn from different observation records; identifying major themes or patterns for further exploration; developing a thematic description of collected data; advancing and testing explanations and theories from the thematic patterns; and drawing conclusions. When planning the thematic analysis, the researcher had to:

1. Decide what counts as a theme;
2. Choose whether to do a rich description of a data set or a detailed analysis of an aspect;
3. Embrace an inductive or deductive thematic analysis;
4. Make a distinction between semantic and latent themes;
5. Have epistemological clarity, realist or constructionist; and

6. Distinguish between the study research question and the actual questions asked in an interview (Saunders, et al. 2016; Braun & Clarke, 2006).

In line with the suggestions given by Braun and Clark (2006) and the analysis provided by other scholars (Saunders et al., 2016; Flick, 2014) the researcher first familiarized with the data from observation of library learning spaces through reading and re-reading the field notes. Initial codes were then developed from the data sets capturing key concepts and ideas within the data. Related codes were grouped together to form initial themes. The emerging themes were listed, refined and reviewed to recognize relationships between them, leaving out less relevant themes and lastly a thematic map showing the themes and subthemes was generated together with labels to show what they were representing. A detailed description of each theme and its significance was done. This then led to the actual analysis of observation data and a report of the findings.

3.8.2 Qualitative Content Analysis

Qualitative content analysis is characterized by three key features: it reduces data, it is systematic and it is flexible. Opposed to other qualitative methods of analysis which open up data, qualitative content analysis is concerned with selected aspects of the data, the ones that link to the research question. A coding frame that is both concept and data driven with both categories and subcategories is built. These categories can be derived from existing literature or the research interest on which the study is hinged (Schreier, 2014). Roller (2019) defines qualitative content analysis as the systematic reduction of content, analyzed contextually to identify themes and develop meaningful interpretations of the data.

This study applied a series of qualitative content analysis steps as presented by Schreier (2014). This involved data preparation by transcribing recorded data and making sure that transcripts were accurate and complete. The researcher then spent time familiarizing with the data by reading through. This was followed by building a coding frame through structuring and generating, defining, revising and expanding, ensuring that all relevant aspects of the data were covered by a category. The diversity of data sources, in this case students and librarians, was reflected. Once the coding frame was ready it was tested on part of the material to allow for evaluation and modification before the main analysis. The main analysis was then conducted, all the data having been coded, the relationships between codes considered and related codes grouped to form themes. The results were prepared in a manner suitable for answering the research questions. Findings were presented through continuous texts.

3.8.3 Computer Assisted Qualitative Data Analysis Software (CAQDAS)

CAQDAS refers to a range of tools used to facilitate the analysis of qualitative data. Saunders et al. (2016) posit that CAQDAS offers a number of advantages in relation to various techniques and that when used systematically they can increase transparency and rigor in the analysis process. CAQDAS was used by this study to assist analysis by facilitating data storage, coding, retrieval, comparing and linking but the researcher did the analysis. The researcher brought in the intelligence and creativity that makes each qualitative analysis unique as posited by Patton (2015)

The Non-numerical Unstructured Data with Indexing, Searching and Theorizing software, also known as NVivo was used by this study to support analysis by storing,

organizing, manipulating and retrieving qualitative data. This software was easy to use and readily available as it is widely used.

3.9 Validity and Reliability

There are questions about the applicability of such terms such as validity, reliability and generalizability regarding their appropriateness in evaluating qualitative research (Rolfe, 2006). According to Golafshani (2003) in the qualitative research approach, the concepts of reliability and validity should be viewed as trustworthiness, rigor and quality. Lincoln and Guba (1985) advise that to ensure that study findings are accurate, qualitative researchers should consider trustworthiness and rigor. They provide a trustworthiness model that constitutes four criteria, namely: credibility, transferability, dependability and confirmability.

In line with this model, strategies for ensuring trust comprise: 1) accounting for personal biases that could have affected the findings, 2) acknowledging biases in sampling and critical reflection, 3) ensuring that interpretations of data are consistent and transparent, 4) establishing a comparison case so that different perspectives are represented, 5) including rich and verbatim descriptions, 6) demonstrating clarity of thought during data analysis and interpretation by keeping a detailed record, 7) engaging with other researchers to reduce bias, 8) inviting respondents to comment on interview transcript, and 9) triangulating data (Noble & Smith, 2015).

This study employed various strategies to ensure rigor and trustworthiness. To increase credibility which has to do with accuracy and faithfulness in the description and interpretation of the phenomenon, this study used triangulation in data collection. By

triangulating, researcher bias was controlled and valid propositions were established. The study used multiple data sources, three different interviews and direct observation. Data collected from observation was triangulated with that collected through interviews. The interview schedule questions were derived from the study objectives to raise validity. Thick and detailed descriptions regarding data collection and observation helped the researcher to establish transferability. The researcher used memos to record a detailed account of the data collected together with the reflections and meanings drawn from the data. This enhanced accuracy and consistency. Also, to establish confirmability, member checking was employed. During the interviews, study participants provided feedback on the findings from observations to ensure accuracy. Later on, select interview respondents were invited to confirm that the interview notes were a true reflection of their views.

3.10 Ethical Considerations

Complex ethical issues are brought to the fore in qualitative research. Studying a phenomenon within its natural context obligates a social science researcher to important ethical practices (Yin, 2014). Saunders et al. (2016) observe that most ethical issues can be anticipated and addressed when designing a research project. They explain that there are ethical issues to be considered at the point of designing and gaining access to the research site, when collecting data and also during analysis and reporting. According to Yin (2014) ethical concerns usually involve gaining informed consent from all those who will be part of the case study, protecting participants from harm and not infringing their rights to privacy and confidentiality, taking the necessary precautions to protect vulnerable groups like children and selecting participants equitably such that no group is unfairly included or excluded.

To take care of ethical concerns, the researcher sought permission to conduct research from the national body in charge of research quality National Commission for Science Technology and Innovation (NACOSTI) and complied with an Institutional Review Board (IRB) for ethical clearance. Formal permission was sought to gain access to the case libraries and permission letters are enclosed in the Appendices. The principle of informed consent was applied across the board, that is, when seeking to gain access to the case libraries and when requesting individuals to participate in the study. The researcher supplied sufficient information about the study, prospective participants were allowed an opportunity to ask questions and time to consider and reach a fully informed and considered decision to participate or not to participate in the study. The information required to reach a decision was contained in a participant information sheet that was supplemented by a written consent form that was signed by the researcher and the interviewee.

The nature of qualitative research is personal, when collecting data, the researcher has to work closely with the participants and as such has to be responsive to interpersonal relations, paying attention to cultural norms, beliefs, values and behaviors (Mertens, 2014). During data collection for this study, the researcher upheld the principles of confidentiality, anonymity and voluntary participation as promised when seeking to gain access and when requesting participation. The researcher was keen to maintain respect of the rights of the participants to withdraw or decline to take part in a particular aspect of the research. A convenient time was arranged with the interviewees making sure that study or work schedules were not interrupted. Regarding observations, the researcher provided a clear scope of what was to be observed. Every effort was made to avoid

observing behavior that was related to private life. Paper copies of interview and observation notes, signed consent forms, transcriptions and other documents containing personal information were handled with care and stored in a secure place.

For continued research objectivity, during data analysis and reporting, the researcher worked towards ensuring that the data collected was not misrepresented. Without being selective on which data to report, the researcher exercised integrity and reported all the data honestly and accurately. Once again, the ethical issues of confidentiality and anonymity were upheld as promised. A level of generalization was used in the reporting so that it is not easy to identify the respondents or participating organizations. Student library users were assigned codes ranging from STU001 to STU074. Librarians were grouped together and assigned codes ranging from LIB001 to LIB017. The data collected was only used for this research project.

3.11 Chapter Summary

In this chapter the researcher discusses the research methodology that will be used to undertake this study. The research paradigm, interpretivism and its postulates are presented and explained. The researcher applied an interpretive qualitative case study to collect data using interviews and direct observation. The qualitative research approach and the case study research design are discussed in depth to demonstrate how they were applied in this study. A multi-case study design was used and a stated-criteria helped to determine the cases. Sampling was purposive and continued to a point of theoretical saturation. Three different sets of interview schedules were used, one for university librarians, another for librarians in charge of user services and instruction, the last one

was for student library users in the case libraries. Two observation checklists guided the observation of library learning spaces and student behaviors. A pilot study was conducted before field work to make sure that the research process, ideas and tools are practically applicable. The data collected was organized and documented then analyzed using two techniques, thematic analysis and qualitative content analysis. The researcher also indicates the measures that were undertaken to ensure reliability and validity of the study findings. Ethical issues that were taken into consideration throughout the study are also explained.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This study sought to establish the status of library learning spaces and their suitability for learning in the 21st century. The preceding chapters present the rationale for the study and the research methodology applied. Qualitative data was collected using interviews and observation. The four case libraries were observed over specified periods and participants who included librarians and student library users were interviewed by the researcher. This chapter presents the findings of the study such as number of respondents and qualitative data collected through interviews and observation. The data is presented in line with themes gleaned from the research objectives namely: assess the status of physical learning spaces in selected academic libraries in Kenya; determine students' library learning space behaviors and preferences; examine the learning support services provided in library learning spaces; and develop a framework to inform the designing or re-designing of academic library learning spaces for the 21st century.

4.2 Response Rate

This research was undertaken in four academic libraries in Kenya which were identified as case libraries. The study aimed to collect in-depth information through direct observation and interviewing. Observation of the library spaces was guided by an observation checklist and was conducted at different times of the day over a period of four days spent in each of the case libraries. Interviews with librarians and student library users were guided by interview schedules. Among librarians, information rich cases were identified through purposive sampling and interviewed. These included four University

Librarians and 13 librarians who were either in charge of user services or reference and instruction in the libraries surveyed. Student library users were conveniently sampled and interviewing continued to a point of theoretical saturation which ranged from 15 to 22. The detailed composition of the respondents is presented in section 4.1 as biographical information. To maintain confidentiality, data emanating from the observations and the interviews was synthesized, summarized and presented under various themes in the ensuing sections of this chapter.

4.3 Biographical Information

In this section, the profiles of librarians and students who participated in the study are presented.

4.3.1 Profiles of Librarians

The case libraries employ many librarians charged with various responsibilities and going by different designations and titles. This study identified librarians who work closely with students in the learning spaces as key informants. The study found that these librarians hold different positions in the libraries and had varying titles such as assistant librarian, user services librarian, research librarian, reference and instruction librarian, research and customer services librarian. In total, 17 librarians were interviewed including university librarians who are key in planning and implementing library space designs and provisions.

Nine of the librarians interviewed were female while eight were male. These librarians differed in age, ten (58%) were over 50 years old, six (35%) are between 40 and 50 years of age and one (1) lies between 30 and 40 years of age. Figure 4.1 below shows this

distribution. Regarding their levels of education, currently, 23% hold a bachelor's degree, 18% are PhD holders and a majority (59%) have a master's degree. This distribution is presented in Figure 4.2. The researcher also sought to find out how long the librarians have held their current positions. The least length of stay was two years for five librarians, three librarians have held their current positions for the last five years and the longest period reported was 18 years for two librarians.

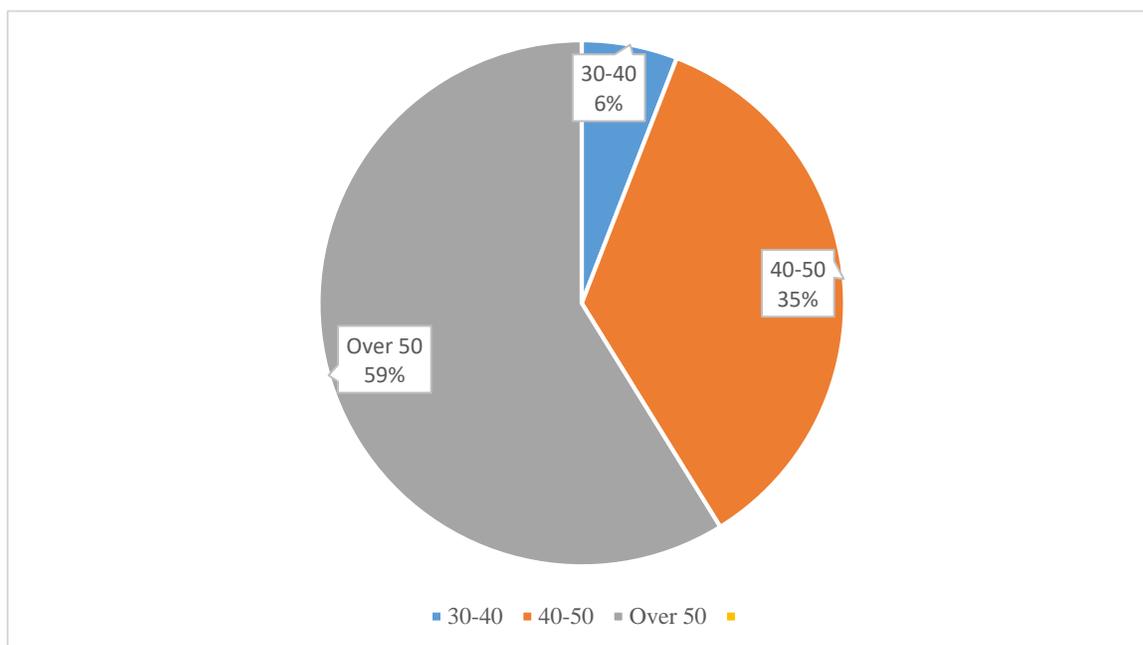


Figure 4. 1: Distribution of Librarians by Age

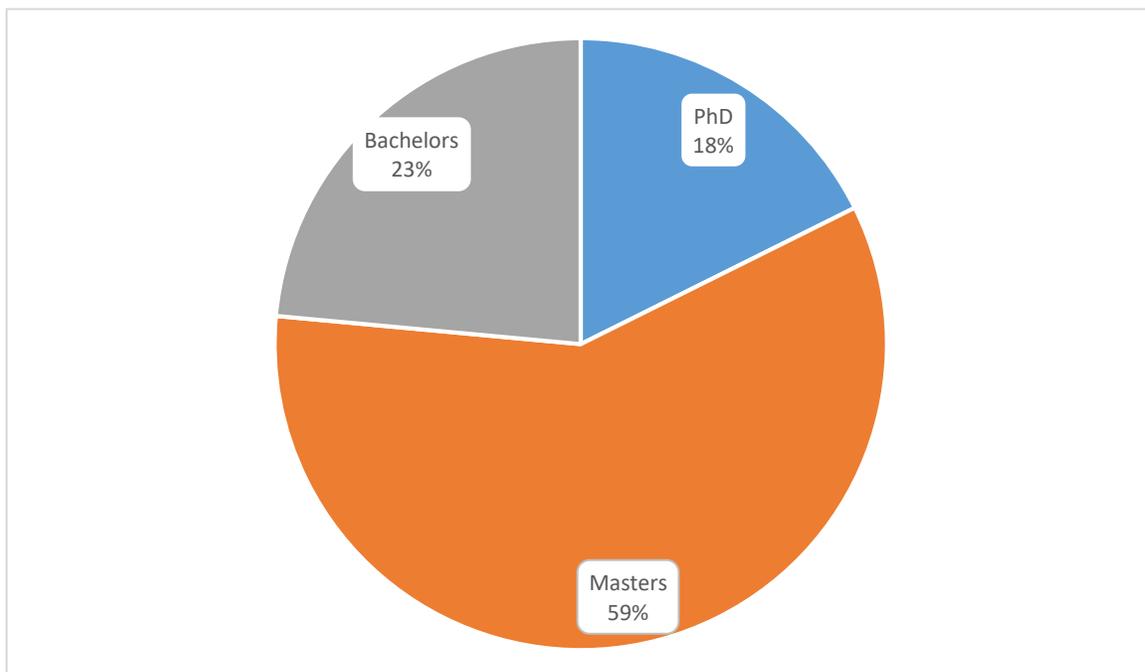


Figure 4.2: Distribution of Librarians by Level of Education

4.3.2 Profiles of Student Library Users

This study focused on students who use the library for their learning activities. To gather views and experiences about the spaces, the researcher interviewed 74 students who were working in the library learning spaces. The students interviewed were varied in a number of ways. More male students (56%) participated in the study as compared to female students (44%). Regarding their age, the majority (74%), fall between the 20 to 30 years age range, 19% are below 20 years of age and only 7% are over 30 years old. This distribution is shown in Figure 4.3.

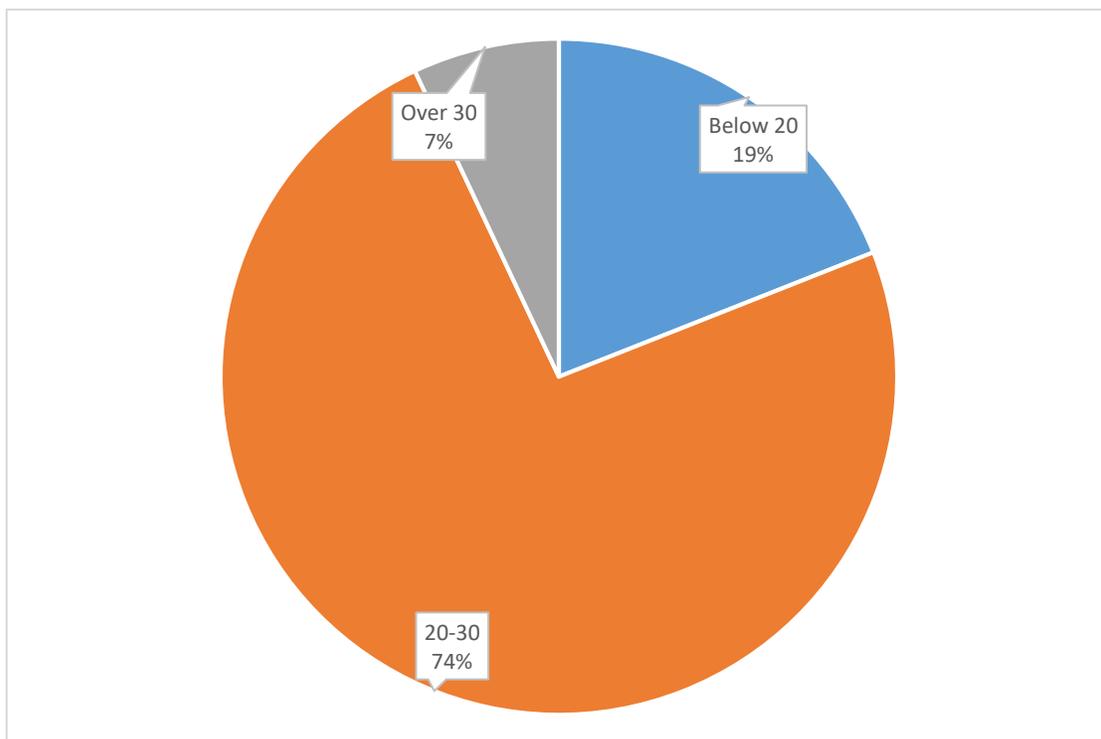


Figure 4.3: Distribution of Students by Age

The students were enrolled in many different degree programs on offer in Kenyan universities. The degree programs pursued cut across such subjects as law, medicine, business, computer science, education, arts and humanities, environment and statistics, among others. The length of time they had been students in the universities was varied as some, at the point of the interview, had been studying for only a few months while others had been there for up to five years, taking their last semester of study.

4.4 Status of Library Learning Spaces

The case libraries under study were significantly diverse in as much as they all exist within a university with a key mandate to support teaching, learning and research.

Observation data indicates that some of the library buildings are relatively new, boasting expansive space and equipped with modern facilities while others operate from old buildings, built for smaller student populations though with demonstrated efforts to integrate technology and modern facilities. This study was interested in how the spaces within these libraries serve the learning needs of students. This section presents the findings on the status of library learning spaces as observed by the researcher and reported by librarians and students interviewed.

4.4.1 The Library Atmosphere

This study sought to establish whether students regard their libraries as welcoming and suitable for their learning. Students variously described the library as “peaceful and quiet”, “spacious”, “not crowded”, devoid of disturbance or distractions, making it easy to focus and concentrate for long. Other descriptors used include “cool”, “exciting” and “comfortable”. Students in one of the case libraries explained that the library had good Internet, books and other facilities were available, chairs and tables were comfortable, that zoning availed the options of open and individual spaces where privacy could be achieved. Features like natural light, good air circulation, orderliness and cleanliness were also used to explain why the libraries were generally considered welcoming and conducive for learning.

Differing opinions were also recorded. Some students said that they did not find their libraries supportive as there were no directions to help them get their way around. Two of the case libraries were also described as “small compared to the number of students”

which is true of libraries built many years back when university enrolment was still small. Some of the comments from the students studied include:

“This library does not cater for everyone, there are many of us who do not come to the library at all, sometimes it is not possible to do what you want to do”
STU014

“Very few of us come to the library to learn further, we only come during exams, my classmates’ attitude is that it is not a nice chill spot, so they prefer to study in the hostels and other places where they feel free to other things as they study”
STU009

In one of the case libraries, the librarians felt that the library needed to be modernized.

His comment is as shown below.

“More needs to be done to modernize the building, there are places in this library that are dark and electric power has to be on all the time, you can imagine what happens when power is lost, the WiFi is not strong everywhere, and the charging points are few and not everywhere. It would be help to make the pace better by bringing in technology, provide a sufficient number of computers and current books since it is long since we bought any new books, besides the student numbers have really grown” LIB004

Observation data indicated that while each of the libraries had a different look and feel, they all maintained an ‘open to all students’ philosophy although the access was controlled through registration and /or security checks at the entrance. Students were observed queuing at the entrance to register, present their identification cards or to deposit their bags in the baggage area. The interior spaces varied greatly fitting within the descriptions of well-lit, dark, open, enclosed, private, silent, quiet, close to high traffic areas, close to the stacks, close to librarian desks, corners with no traffic or along the windows with lots of light and an outside view. It would, therefore, seem that, the libraries were welcoming and mainly supportive of individual learning despite the variations observed in the nature of their spaces.

4.4.2 Types of Learning Spaces Provided

Variety witnessed in student learning styles, needs and behaviors is best supported through variety in space provisions and features. This study sought to establish the types of spaces provided for student learning. Interviewed librarians stated that the key areas in their libraries for student learning were reading areas and computer areas. Observation data also indicated that study areas were the largest followed by computer areas. Computer areas are variously labelled as “computer labs”, “resource center” and “e-resource center”. These were regarded by students and librarians as very important since as reported by one librarian “some students do not have computers or smart phones”. However, in all the cases, the computers provided were found to be few in number and students had to queue; also, they were old, not serviced and therefore “not exciting to use” as explained by one student participant.

Similarly, observation of the spaces established that reading space is either open or enclosed in the form of study carrels where students can enjoy privacy, ownership and comfort. It was notable that only two of the case libraries have functioning study carrels. While some libraries did not have any carrels, some have not kept them in a usable state, some have turned them into storage space and yet others, have reserved them for graduate students and faculty.

One of the librarians interviewed confirmed this state of affairs explaining that “we do not have a place to store old computers and broken chairs, we have kept them in the carrels” (LIB005). Even so, one of the libraries had an impressive 120 carrels, that are usually not locked, and could be reserved by postgraduate students for a semester. Open

study areas were spread throughout the buildings, some located in between or adjacent to the stacks for those wanting to read near the books they wanted to use. They were furnished with different kinds of furniture ranging from tables that have been partitioned to create privacy and reduce opportunities for interaction to large wide tables that can seat up to eight people. One library had sofas positioned within the open reading areas for students wanting to take a break and relax.

Other spaces available in the libraries as ascertained through observation, although not across all the libraries surveyed included:

1. Discussion rooms - found in only one of the libraries;
2. Post graduate research commons - observed in three libraries;
3. Instruction rooms or space for training - provided in all the four case libraries;
4. Conference rooms - found in two libraries;
5. Innovation hub – developed in one of the libraries;
6. Presentation space – provided in one of the libraries;
7. Newspaper reading area – found in three of the libraries;
8. Persons With Disabilities desk or space – set aside in two of the libraries;
9. Leisure reading area – seen in one of the libraries;
10. Exhibition area – located in one of the libraries.

Most of the librarians interviewed described collection spaces, staff spaces, service desks as key learning spaces since they enable interaction with collections and staff. One of the user services librarians emphasized this saying that “it is not possible to ignore the space where librarians are stationed, the space works both as a material processing zone and a

service provision area” (LIB016). Other non-library facilities like snack bars, art galleries, writing labs, education technology centers, classrooms and multimedia centers were yet to be included in the libraries as per the observation data.

Zoning, which is common in libraries that are keen to cater for variety, was observed in only one of the libraries where carrels were provided for those seeking silence; open areas for those wanting to study alongside others and not worried about low conversation; and discussion rooms for group work. The other case libraries were entirely silent or quiet individual study areas. Another form of zoning, in existence in three of the libraries, is where special arrangements have been made for postgraduate students either within the library building or offsite, in the form of a branch library. In these postgraduate spaces, rules are relaxed; conversation, food and drink are allowed within limit like in one of the libraries this means a bottle of water or yoghurt; and print is minimal as reliance on electronic databases is emphasized. A librarian in charge of a postgraduate-only space had this to say:

“Postgraduate students are mature, they know what has brought them to the library, so many times they are focused and their needs are very different from those of undergraduate students, it would be unfair to mix the two groups. These young ones are unsettled and it is like they are not able to sit quietly for long”
LIB013.

From the foregoing, it is construed that the academic libraries surveyed largely provide quiet individual study areas. Computers are provided in the form of labs or resource centers though they are small in size with few and outdated computers. Other forms of learning spaces exist though in a disparate manner and mainly in one of the cases libraries.

4.4.3 Other Learning Spaces of Choice

Features, facilities and characteristics of non-library informal learning spaces, that are frequented by students, can provide insights into what is working or not working in library learning spaces and inform new or reimagined spaces. The students interviewed stated that apart from the library, they also undertook academic activities in their halls of residence, classrooms/lecture halls when there are no lessons, laboratories, homes, cafeterias, open spaces on campus and at the student centers. They explained that these study locations have “cushions”, “more natural light”, “privacy”, “friendly technicians” “coffee and snacks” and “blackboards”. The students further explained that these learning spaces worked for them since there was “not much control”, “there is freedom” and “one can bring food and talk loudly”. Notably, most students ranked the library as their preferred learning space with some saying that they only study in the library. The other learning spaces seem to be chosen because they are conveniently located and accessible when the library is not open. Some students see them as their ‘go-to’ places when they do not want a very silent place and wish to study with friends. They are the best for discussions and group work although some students observed that one had to be “self-driven” and “focused” since there are many distractions and they could get very noisy.

This is evidenced by the following verbatim statements from students:

“I only study from the library, the hostels have many distractions. It is really hard to get much done in the hostel. In fact I am not somebody who can concentrate where there is noise. So, the library is where I find peace.” STU009

“You know some times you want to study and still be able to talk to friends, may be you are doing an assignment that is not so difficult and you want to be with your friend, even ask for ideas, that is why I go to the student center” STU043

“In the cafeteria upstairs, you can do anything: you will find people reading, listening to music, eating and even talking loudly. The place has a lot of freedom which I like. I can walk in there anytime, we even do our group work from there”
STU057

4.4.4 Academic Activities not Supported by the Spaces

An ideal academic library should provide learning spaces that support the whole spectrum of student learning activities, needs, styles and behaviors. Libraries are striving to make sure that a majority of students, if not all, is included and supported. Interview data from this study shows that learning spaces provided in the case libraries mainly support individual study and research work. Discussion and group work emerged as the two top learning activities that are not supported in the libraries yet they form part of what students do in their learning. Responses from students included:

“The library has books, yes, but you are not allowed to discuss and share what you know or come up with new ideas. Most of the time, we like to consult with each other on assignments and even things that are outside of class” STU009

“Learning is not just about books; it is also about what you can communicate”
STU006

“For me the guards should be told to stay at the entrance. Our plan is never to disturb others, so we work together, we try to keep the noise low most of the time. But when the guard keeps coming to tell us to keep quiet, it kills the psych”
STU063

“My friends do not come because they cannot talk, this is a generation that likes talking and doing many things together. If they cannot talk, they say it gets very boring so they just avoid this place, the silence makes them uncomfortable.”
STU008

Only one of the libraries had discussion rooms and allowed students to work in groups in the open areas though their conversations had to be kept low. One librarian actually stated that “they should not talk in the open areas, but we do not go round telling them to

keep quiet, only when they get noisy” (LIB012). The other libraries did not have any provisions for discussions or working in groups. Students interviewed stated that group work is done from “the halls”, “outside the library” or from “empty classrooms”. The need to discuss or work collaboratively among students cannot be overstated. Information obtained from observations, shows students teaming up, seated in groups, consulting in low tones and even where furniture is meant for sitting alone and set far apart, students could be seen standing up to go consult.

The librarians interviewed confirmed that the spaces did not support discussions or group work, yet there was a lot of collaboration going on in their libraries and that some students had created their own spots where they knew they could work in a group. These spots tend to be tucked away in corners away from security guards and staff desks. In one library, a librarian observed that students preferred the topmost floor as it has fewer offices and guards were not likely to hear their voices. To justify the lack of collaborative spaces, some librarians explained that the available space is not enough to allow them to set aside a discussion area and that discussions cause distractions.

Other learning activities that were not supported in the spaces are multimedia work and online classes. There were no spaces set aside and equipped for students to do more than reading. Owing to restrictions brought about by the Covid-19 pandemic at the time of this study, many classes were held online. Students noted that the libraries were yet to provide spaces that are technology enabled with talking allowed, where they could participate actively in these classes.

4.4.5 Most Supportive Space Features

Apart from providing space for learning, attention has to be paid to what goes into that space to make it usable and useful. This study examined space features through interviews and observations. From observation, newer buildings exhibit large spaces and students interviewed referred to them as “spacious” “not crowded”, allowing free movement, access and interaction. Further, they had in place ramps and lifts that increase access especially for Persons With Disabilities (PWDs). Librarians interviewed complained of insufficient space in the older libraries, crowding especially during exams and limited movement or access for students. These findings show a clear dichotomy between the libraries with regard to affordances of older and newer library buildings. However, students from across the libraries stated that they valued “silent”, “quiet”, “no noise” and “secluded” as features that support their learning.

Natural light and good air circulation are the other features mentioned frequently by students. The researcher observed that some of the library buildings were green, using natural light throughout the day, with skylight through their atriums; well ventilated to allow air circulation and fitted with big windows that allow a view of the outside. It was also observed that some of the libraries under study could not function without artificial lighting in some of their spaces. One student participant observed that “books are covering the windows” making the place dark and devoid of natural light. Low ceilings that compromise natural light were observed in some of the spaces. Dark spots with no lighting were also notable.

Most libraries make efforts to stay clean and tidy. Students described them as “very clean”, “well organized” and “orderly” although in some cases students complained that sometimes washrooms were not cleaned and could smell. Chairs were described as “uncomfortable” and “cold”. In one of the libraries students were seen with their own small pillows for cushioning the wooden and metallic chairs. Where the chairs are cushioned, they were described as “just right” for long hours of sitting. Tables within the learning spaces, as observed, vary in size, some were large and wide, others were partitioned to reduce openness and create individualized space. Some libraries had soft seating within the reading spaces. No space had flexible or configurable furniture.

Various tools, equipment and facilities are provided in the spaces to enable and support learning. Student interviews indicated that the availability of the Internet, cabled and Wi-Fi, in the spaces was a major reason why students chose a space for their learning. They reported that they used the Internet to access academic databases, stream educational videos and for social media. One student confirmed the high demand for the Internet saying that “I honestly have no idea what I would come to do in the library if there was no Internet” (LIB041). Computers, printers and power outlets within the spaces were also appreciated by students. Smart boards and white boards were provided in discussion, presentation and instruction rooms though not across the libraries.

Observation data showed that across the case libraries color has not been used to enhance ambience. Any one library has one color all through its walls and floors although one library has a different color of furniture in its leisure reading space. Wall art was only

seen in one of the libraries that has murals. Carpets and soft furnishings are either not there or used minimally.

Clearly, silence is at the top of the most supportive features in the libraries. Other features like lighting, furniture comfort, interior décor and amenities such as washrooms are important though they are yet to be fully achieved. The case libraries are definitely at different levels with regard to providing learning spaces that suit the needs of their learners.

4.4.6 Interaction and Socialization Space

Collaborative and social approaches to teaching and learning, which are now common in institutions of higher education call for supportive learning spaces. Students interviewed stated that they would like to see spaces for interaction and socialization added in the library. Most expressed their desire for discussion rooms, a café or snack bar for food and drink and recreational space where they can meet and chat with friends. Below are some of their comments:

“The whole library is kind of solemn. I would like to come with my friends, they sit next and do their work and we can talk if we want to. Yes, it is good not disturb other but being able to talk would make the place more enjoyable, and not feeling watched” STU005

“Drinking water and snacks would help me stay longer. You know when you are doing serious stuff, you get hungry quickly, eating is also a good break from the work. When you go outside the mood goes” STU054

“I wish there was a discussion room, and may be a coffee shop” STU0063

During interviews, students and librarians suggested that to enhance interaction and socialization, these spaces will need to have big and small tables; tea, coffee, snacks and

food; water dispensers; microwaves; easy and soft seating; novels, magazines and newspapers; games; as well as televisions, big screens and smart or white boards. Indeed, as per the observation data, none of the libraries studied provides a relaxing zone, with food and/or drink, fewer rules and less control; where students can interact, socialize or work collaboratively. Students and librarians proposed that these spaces can be located within the library building or just outside so long as they are easily accessible and the noise coming from there does not disturb those who are seeking silence.

This data is indicative of the traditional view of learning as formal and devoid of social learning. Besides, libraries have not been fashioned to support student learning needs beyond reading. They are yet to appreciate the role of libraries in supporting academic, social and physiological needs of students. The need for this kind of support was expressed by both students and librarians.

4.4.7 Satisfaction with the Spaces Provided

Levels of satisfaction with the current learning spaces were elicited from both students and librarians. They asked for more and updated computers, stronger Wi-Fi hotspots, comfortable chairs, power back-up and more outlets, better security within the spaces to avoid losing their items, access to food, more natural light, heaters since some of the spaces get really cold, current books, more washrooms and drinking water. Further, librarians stated that students often complain about insufficient power outlets, uncomfortable furniture, Wi-Fi strength, restrictive library rules, noise in the reading areas, inadequacy of library open hours, and the small number of study rooms or carrels. This is evidenced by these verbatim statements from librarians and students

“In every annual library survey, students seem most dissatisfied with the Wi-Fi strength. It is not like nothing is being done to make it better, may be the student numbers are growing or it can never be enough” LIB013

“We understand that students now come into the library with their gadgets, and you know when this library was built it was not imagined that there can be need for so many power points. We have tried to fit sockets where it is possible. We also have a few power extensions for loan to students since the sockets are few. It also helps that students are able to share, you will see them removing their devices so that others can also charge.” LIB001

“I wish we can have better chairs, at least those ones that have a soft seating area; these ones are too hard; I think I get backaches because of them.” STU058

“What is wrong with me coming with my water into the library? I never understand, and if the library does not want us to come in with water, then they should provide a water dispenser, even coffee, that helps with getting energy to go on and on” STU008

Generally, data points to the fact that the existing spaces only support some academic needs and that there are areas needing improvement.

In all the case libraries, librarians reported that they faced a number of challenges in managing learning spaces. The biggest challenge was controlling noise in the spaces. Librarians indicated that some students want to discuss and talk in the same space where others need silence in order to concentrate. Accommodating the two groups was challenging especially in libraries that have no provisions for discussion and group work. Many times, the noisy group would end up leaving the library. One of the librarians expressed her frustration with noise saying that “you keep getting reports from students that a group is making noise, sometimes I am forced to tell the guards to ask the students to leave” (LIB016). Librarians also said that the space available in their libraries was small, the number of students has been growing but not space. They are, thus, not able to cater for needs as expressed by students.

Other challenges had to do with adequacy of such facilities as computers, charging points and furniture. The provided computers were said to be too few, old and lacking modern software. The charging points were also few compared to the number of students, mostly located along the walls and some were not working especially for cases where the tables were power-ready. With regard to the furniture, wooden and metal chairs were reported not to be comfortable and in one library, there were more tables than chairs due to frequent breakages. Librarians observed that students lost a lot of time queuing for these facilities. Sometimes, they have to solve cases resulting from competition for space and facilities. Washrooms present another challenge in most of the libraries. In one library, students had to leave the library and use washrooms in another building. One of the students interviewed stated that if he had an opportunity to improve the library, “the first thing I would bring in here is a toilet for students” (STU022). In another library, there was just one washroom per gender. Maintaining clean, tidy spaces and washrooms was also said to be challenging in some libraries. Librarians explained that water was not always available and labor was not enough.

Librarians were, therefore, either “not satisfied” or “moderately satisfied” with the learning spaces. They suggested that they would be more satisfied if they had: adequate space to accommodate the varied and changing needs of students.

1. A café or access to food and water for students who do not wish to move out of the library.
2. Facilities like lifts, ramps, washrooms and furniture to cater for the needs of PWDs.
3. Stronger Wi-Fi and better ICT support.

4. Spaces for discussion and group work.
5. Variety of comfortable furniture.
6. More and cleaner washrooms.
7. A sufficient number of power outlets or power ready tables.
8. More color and art on the walls for better ambience.
9. Socialization space where rules are relaxed and students can engage freely amongst themselves.

The findings as presented clearly indicate that the case libraries are generally regarded as conducive for learning. However, not much variety is witnessed in their space provisions. The spaces are mainly spaces for individual quiet study, only one library providing for group work. This means that only a small fraction of student learning activities and needs is catered for. The libraries provide no room for interaction and socialization which is increasingly part of learning. Students and librarians expressed desire for variety in space provisions, better facilities such as the Internet, more comfortable chairs and tables as well as improved amenities.

4.5 Student Space Behaviors and Preferences

This section presents findings on student behaviors within the learning spaces along with their considerations when choosing a learning spot.

4.5.1 Frequency of Library Visits

The researcher solicited information regarding the frequency of library visits among students. Students interviewed indicated that they visit the library regularly. Most students visited the library every day; some used the library from Monday to Friday and

study from home or halls of residence during the weekend; others indicated three to four days a week, others twice a week and others went in only “between classes”. A few stated that they visited the library “rarely” and mostly during the exams period. There were also those who said that their library visits depended on their schedule, whether they were free or had assignments, discussions and projects to do. One student explained that she visited the library “less and less” because there were too many restrictions.

Regarding duration of stay in the library, data collected showed that hours of stay in the library varied from student to student. There are those students who stated that they stayed in the library the whole day and explained that their classes were online. Principally, most students stayed in the library for durations ranging between two hours and six hours. They indicated that during this time, they would “come and go”; they would go to class and go back to the library, also they took breaks to drink water, find food or meet with friends, much as some said that they did not take breaks. One student shared her routine through this statement:

“Most days of the week, I first report to the library, I always sit around here. When I have a class, I just leave my things here, attend the class and come back. I get hungry but that has to wait till evening. May be if there was food in the building I would eat.” STU011

Many explained that the breaks were disruptive and could kill their mood to study. They wished for a way they could have all their needs, whether food, water or printing, met within the library.

4.5.2 Typical Learning Space Activities

Student visits to the library are aimed at accomplishing certain goals or fulfilling certain interests. Through interviews with students and observation of the spaces, this study established that students visit the library mainly to perform one or more of the following academic activities:

1. Undertake individual studies;
2. Complete assignments;
3. Consult print books;
4. Discuss content covered in classes with peers;
5. Attend online classes;
6. Carry out research using both print and electronic resources;
7. Use past examination papers;
8. Access the Internet;
9. Stream academic videos or lessons;
10. Browse the shelves;
11. Read newspapers and magazines;
12. Revise course content;
13. Undertake group work;
14. Work in a group but alone; or alongside others
15. Interact and connect with others;
16. Use whiteboards in the discussion rooms;
17. Borrow or return books;

18. Use computers in the resource centers or computer labs as well as personal computers.

Within the library spaces students also reported that they spent some of their time: listening to music, watching movies or short video clips on Netflix or YouTube, visiting social media platforms to catch-up, texting and chatting with friends, downloading movies to watch later; playing games, relaxing, sleeping or napping, browsing the Internet for news and updates, making phone calls, talking to others and listening to podcasts. Findings from observations of the spaces recorded students with their earphones on most of the time, sleeping, chatting with friends or talking on phone, snacking, and some just seated watching others. Clearly, research findings reveal that students use the learning spaces for activities which are not strictly academic.

Most students explained that they engage in these activities to take a break from reading. Others, especially those who watch or download movies, said that it takes up a fair amount of their time in the library since the Internet is good. One student even said that “I only come here to download movies which I watch later in my room” STU014. Another student explained that he used the library space and Internet to build websites and earn income. Those who said that they did not engage in any of these non-academic activities within the spaces explained that they put their phones off to avoid disturbance and moved out of the library when they wanted to take a break. Those who went to the library purposively to sleep explained that they found the library quiet and conducive for sleeping.

4.5.3 Preferred Learning Spot

Students, once in the library, have to make a choice of where to study from except in situations like the one described by one librarian, “our space is too small, the students have no options, they cannot choose”. Information gained from interviews and observations shows that students choose spots where:

1. There are power outlets;
2. The Internet is strong and stable;
3. There is more natural light;
4. Distractions, if any, are minimal;
5. Chairs are cushioned and comfortable;
6. Books in their discipline are nearby;
7. There are partitions, separators, privacy, seclusion or carrels;
8. There is some sun and warmth;
9. The wind flows;
10. They feel free and can discuss; and
11. They can see others studying.

Students explained that they wished to have their gadgets charged and that they need the Internet for both academic and social uses. These can be areas along the walls, at the center or some floors of the building including the area just outside the library, depending on where the Wi-Fi routers are located. Students were observed clustering Wi-Fi hotspots even when they had to take turns using the charging points. Areas where the Internet reception was deficient were generally less crowded. For students who did not have personal computers, their choice was the computer area and in some of the libraries they

had to wait in line to use a computer. In fact, in two of the libraries the computer stations were consistently on demand such that librarians had to limit the length of use per student. Access to power outlets, the Internet and computer use seem to be major considerations when choosing where to sit in the library.

Noise levels and privacy also determine where one is going to sit, some students stated that they choose secluded places, corners, with less traffic and rid of distractions. On the contrary, others preferred open areas where the space is a lot and where they could see others studying. Comfort is another factor as student statements indicated that they went for warmer places, natural light, cushioned chairs or sit close to natural plants. In one library, as much as the facilities on its three floors are relatively uniform, the second floor was most frequented because it is warmer and has more natural light. In another library, one librarian noted that the serious students liked the ground floor while those seeking strong Wi-Fi and collaboration prefer the topmost floor. Librarians' direct responses include:

“Our second floor is the busiest, it has more light and it is generally warmer, students say the other floors are cold, so you will find it very crowded when the other places are empty, it is often the first one to fill up during exams. They also like the short loan where they can get past exam papers” LIB013

“The Internet seems to be strongest on the third floor, students love that place. But I also they go there because there are fewer librarians up there, the guards have to make effort to get there, so you will find some noise there.”LIB016

Observation findings indicated that students tend to book or own a space that they prefer. They would leave their belongings unattended and take short or long breaks and still come back there. This does not work well where resources are limited. There were also those who stated that they did not have a favorite place, their choice was dependent on

what they wanted to do, discussion or individual work and whether they wanted deep focus or relaxed reading.

4.5.4 Rules Governing Behavior

All the case libraries were reported to have rules that govern behavior within the spaces. One librarian emphatically said that “we must have rules, otherwise this will be a mad house” (LIB015). Data collected from this study shows that these rules revolve around noise, food and drink, as well as dressing. Noise was forbidden in all the libraries investigated. One of the libraries allowed drinking water. Food in all its forms was forbidden across the libraries except in spaces set aside for postgraduate students. The postgraduate spaces allow food and drink, with some providing water dispensers, coffee makers, microwaves, and one having a café within the space. The rules on dressing forbid capes, heavy jackets and also refer to indecent dressing.

Librarians interviewed noted that the most violated rule was noise. They explained that students wanted to discuss and talk to each other and even take calls in the reading areas. Librarians and security guards had to patrol the spaces to make sure that there are no groups making noise or misbehaving. Findings from observation show that the rules were clearly spelt out on signage in most of the spaces. These findings also showed that whereas food and drink were not allowed, students still managed to eat and drink within the spaces. Librarians also discussed student space behaviors that they would like to discourage. Of course, noisemaking topped the list followed by talking on phone. Other behaviors encompass vandalism, mutilating books, idling, going to entertainment sites when using library provided computers, getting intimate while in the private or secluded

reading spaces, sleeping, and sneaking in food and drinks. They explained that these behaviors discourage and distract other students using the spaces.

4.5.5 Centrality of Print

Findings from interviews with librarians and observation of the spaces, showed that generally print resources were considered central and actively used for learning by students. Librarians described print resources as primary and explained that they were part of what is needed for the library to function. Further, they explained that print seems to work well for students studying literature, law and medicine. Equally, students working in the spaces were observed consulting print books on the shelves and on the reading tables; there were books left on the reading tables and some students indicated that they liked to sit near books in their discipline although many complained that most of the books were not current. Only one librarian indicated that print resources were no longer central to learning as the electronic version of library materials was preferred and taking over.

Regarding what could change in the foreseeable future, librarians agreed that the centrality of print materials may not last long since the trend is changing towards electronic resources although the use of print resources will continue. Below are some verbatim statements from librarians:

“There is currently a lot of print being used but again we are subscribing to more and more digital resources. The truth is that print could disappear from the shelves in the future because of e-resources, this is already happening with journals, we have had to move our print journals.” LIB012

“We are going online, there are now more budget approvals for e-books, the university is encouraging purchase of e-books, besides, we all saw how they were

beneficial when learning went online during Covid 19. We wished we had more e-books.” LIB007

“The move towards electronic resources is inevitable, people have been heard saying that there can never be a paperless society, but that does not mean fewer electronic resources are going to be published. In fact, I see a future where there is little or zero use of print resources, may be very rare collections only.” LIB004
“Covid-19 helped us to move faster into using e-resources, I think there is no one university library that did not grow it e-resources during the period. I even know that some librarians were at the forefront of discovering illegal sites for textbooks. This will continue because people confirmed that online learning is possible. Our university is already seeking approvals to move some degrees online.” LIB016

It was noted by librarians that the shift towards electronic resources will significantly change the way learning spaces are designed. They envisaged “weeding of print”, “a wall-less library”, “no need for shelves” and “more redesigning”. Specifically, libraries will have less emphasis on space for collections and more focus on creating space for reading, research, training and technology. One librarian observed that “we might need lounges, since students will only need connectivity” (LIB016). In agreement, another one opined that “library buildings will still be needed for silence and for interaction with others” (LIB012). Contrary to this, one librarian asserted that “there is no time we will not use print, space design is not likely to change” (LIB007).

In view of these findings, student behaviors and preferences within the learning spaces are varied. Library visits and duration of stay vary from student to student, no pattern was noted, they all come and go depending on their needs. Within the spaces they engage in activities that are both academic and non-academic, using both print and electronic information resources and preferring certain spots because of their affordances. Some of their learning activities are undertaken in other spaces on campus which are convenient

and less restrictive. Across the cases, there are rules governing behavior that are enforced by both librarians and security guards, which possibly promote or hinder learning.

4.6 Learning Support Services

This section presents findings on the services available in the learning spaces and the support given to students in the spaces.

4.6.1 Librarian Support

Twenty first century learning spaces are often described as service rich. Experiences of students were explored with regard to the level of support received from librarians. Students said that they receive orientation to the library, they got answers from librarians whenever they were seeking clarifications about services, information about opening hours and when they wanted to locate or borrow books. Some students indicated that they had received training and research assistance from librarians. Technology support and troubleshooting were also mentioned as support received from librarians. There are those who stated that they had had “no interaction”, “minimal interaction” and “not much support” from librarians and went further to explain that they did not know any librarians. Students suggested that to be more supportive, librarians should “badge up”, be welcoming and be more available or ready to help as opposed to enforcing rules.

On the other hand, findings from interviews with librarians showed that librarians offer various kinds of support to students in the learning spaces. Librarians support students by: showing them how to access resources; providing the needed infrastructure; offering trainings on access to resources, providing advice on referencing and publishing; maintaining a friendly environment, clean with comfortable chairs; providing a Selective

Dissemination of Information service; performing literature searches; availing quick consultation sessions; and offering technology support or linking them to the campus ICT team. Observation data indicated that across the libraries there were desks manned by librarians, located close to the reading areas where students could seek help. Students were observed consulting with librarians.

Looking at the above, one would say the findings indicate that the support provided in the learning spaces by librarians is basic. This is because the support is largely traditional. The expected support in the 21st century should be innovative and highly technological to include but not be limited to research data management, support with specialized software and applications, technology support among others. Students explained how they would like to be supported by librarians. Below is a description of the support students wish to get from librarians:

1. Access to e-books and online content
2. Training on publishing, plagiarism, accessing resources when off-campus, citing and referencing
3. Finding and locating books; knowing what resources are available
4. Security of the baggage area
5. Reduction of distractions and noise
6. Provision of more and better computers
7. Printing from personal laptops
8. Technological help
9. Research work
10. Literature searches

11. Being more available and willing to help

Librarians confirmed that the services with the highest demand were accessing e-resources and research work or literature searches. However, some students stated that they did not need librarian support as they were able to undertake their studies on their own.

4.6.2 Skills and Knowledge among Librarians

There were varied opinions coming from students regarding the level of skill and knowledge among librarians. Some students considered librarians skilled and knowledgeable, others said that librarians were still learning, while others were non-committal saying that they had not had interaction with librarians and could not know whether they were skilled or not. Students and librarians alike agreed that librarians needed computer or technology skills as well as good knowledge of the web and the online environment including social media to be able to support students effectively. They said that skills to enable librarians to initiate and maintain good relationships with their clients were necessary. These were described as “people skills”, “interaction skills”, “customer care” and “communication skills”. To support learning, research skills, teaching skills, presentation skills, information literacy and digital literacies were cited as necessary.

Findings also indicate that along with these skills and knowledge, librarians needed to have certain competencies so as to serve students well. Librarians and students observed that librarians needed to be adaptable, flexible, understanding, open minded, helpful, proactive, critical thinkers, willing to learn and empathetic. To develop this set of skills

and competencies, it was suggested that a change in mind set and organizational culture would be required. Librarians will need to continuously attend workshops, trainings, conferences, network with others in the profession and engage in self-learning to refresh and update their skills. It was also proposed that library school curriculum could be reviewed to include some of these knowledge

4.6.3 Other Supportive Staff and Campus Units

To provide ready support for the variety of student learning needs in the spaces, libraries are expected to collaborate with other campus units and departments. This study found that the case libraries work closely with the ICT office and teams to support students in the learning space though none of the libraries had an ICT desk or office within the spaces. Students were simply referred to the ICT team and got help through email correspondence, telephone or by visiting the office physically. Other offices that were identified as working with the library from time to time to support students were finance, teaching units and student affairs. One of the case libraries had the ICT, Post Graduate and Research, Online and Distance e-Learning and the University Press offices located in the same building. Another library had just had the Post Graduate and Research office move from the library building to another building. Apart from referring students to these offices, the libraries did not have a laid down collaboration mechanism.

Outside of lecturers and librarians, students indicated that they considered only fellow students or friends, laboratory technicians, course advisors, security guards, kitchen staff and cleaners as supportive of their learning. Librarians suggested that collaborations with such units as special needs, language center, ICT, research, publishing, marketing and

teaching departments have a chance to enhance the level of assistance in the learning spaces. These could take the form of desks in the learning spaces that are manned full time or part time, an office within the library building, or a designated officer who works with students in the learning spaces. In some libraries, students on work-study programs had been of help to others in the library spaces.

Learning support services are present in all the libraries studied. The study found that they are mainly traditional as the librarians are yet to bring on board modern and innovative services. Various skills, especially those to do with technology, and competencies like adaptability, were cited as what librarians need to equip themselves with to better support learning in the 21st century. Collocation of student services that are spread throughout the campus is yet to take place, meaning that the libraries are yet to be regarded as one-stop learning places. As such, learning support is yet to evolve and the libraries cannot be described as service-rich.

4.7 (Re)design Plans and Projects

This section presents research findings on planning and designing library learning spaces.

4.7.1 Changes in the Last Five years

The respondents were asked to identify changes that had been undertaken in the last five years as this was deemed necessary in the development of a framework for designing and/or redesigning of learning spaces. All the librarians interviewed indicated that there were minimal changes implemented in the last five years. The commonest change had been the moving or weeding part of print collections, periodicals in most of the cases, due to their redundancy or reduced significance, and creating more reading space. Librarians

observed that this gave them a chance to bring in additional furniture and to have space that is more open and better lit, more airy and less stuffy since shelves were no longer there. In some cases, the moving of collections gave birth to post graduate, newspaper reading, and leisure reading areas. Below is part of what librarians had to say:

“Not much has changed, we have only been able to remove bound periodicals to the basement and used the space they occupied to create a postgraduate space. But this move made a big difference because the shelves were crowding the place and only a few users were accommodated there. Now postgraduate students have a place of their own, sometimes, undergraduates are asking to use the place”
LIB0012

“Our leisure reading area was our current periodicals space. All the periodicals can be found online so we moved the print periodicals to bulk shelves and created this space where students can relax. It is yet to be the way we dreamt it but it is something and it is being used, more and more novels are being borrowed. Sometimes you just find students just seated there doing serious work, I think it is because the seats are more comfortable.” LIB017

Other changes reported include: creation of a resource center; turning space meant for meetings or classes into space for print collections; moving computers to an easily accessible area for use by PWDs; reorganizing the reference desk to make it more user friendly; and purchasing adjustable furniture for PWDs. Two of the libraries noted that many students sit right outside the library building to access the Wi-Fi and had made suggestions to the relevant departments to construct comfortable benches around their libraries. These suggestions were yet to be implemented at the time of data collection.

Librarians observed that most of the changes mentioned above were possible because they were in-house and did not require much funding or approvals beyond the library. Where approvals and funding were needed, there were either no funds or the approval and requisition processes were lengthy and discouraging. In some case, there was

resistance from some decision makers. Librarians interviewed unanimously agreed that various changes and adjustments needed to be made in their libraries to create learner-friendly environments. They proposed that since funding such changes may not be immediately possible, modifications requiring minimal or zero budgets could be pursued.

4.7.2 Factors to Consider When Redesigning

When asked about the factors that would be considered when redesigning learning spaces, students and librarians proposed a number of factors that would enhance the creation of spaces that are supportive of student learning. The suggested factors comprise:

1. Zoning to include quiet, silent and noisy areas;
2. Training centers and support desks;
3. Variety in types of furniture to ensure they include adjustable, flexible, relaxed and comfortable;
4. Information resources;
5. Variety in color, whether furniture or walls;
6. Access to food, drink and water;
7. Number of students;
8. Variety of student needs and ideas;
9. Sufficiency of space, equipment and facilities;
10. Wide windows for a view of the outside, more air and light;
11. Strong Internet connectivity throughout the building;
12. Power outlets to charge devices;
13. Convenience in terms of location or proximity to other campus spaces.

4.7.3 Student/User Involvement

The respondents were then asked to give their views on the need to involve the students in (re)designing of the learning spaces. They all responded in the affirmative as shown in the responses given below:

“They are the main customers; it is important that their ideas are sought. Besides they know best what they want, we as librarians can only think we understand, but let it come out of their mouths, let them tell us, that way they will use the place because will be what they asked for.” LIB003

“Without us, not for us, we are not included, surely that cannot be for us. Young people today like to be heard and they are not without ideas. Well, it is hard to take care of what every student will want but a majority can win.” STU068

“They can help generate ideas that can create a library that fits all or a large percentage of students. I think gone are the days when students were ignored, this generation of students is very vocal and they know what they want and will not fear to say it. It is a good move to have them in the planning committee” LIB15

“If they design it, they are likely to promote it and use it. Because it will fit their desires, look the way they want and most likely they will be proud of it. And feel like it belongs to them.” STU070

However, librarians noted that students had not been meaningfully involved when making changes in the spaces, where regular surveys were conducted, they tended to be general. Librarians suggested that involvement could be done by seeking opinions of students individually or by going through student leaders. They affirmed that a thorough needs analysis or focused survey could reveal what students needed or desired in terms of learning space. Other stakeholders named were lecturers, administrators, librarians and university planners.

4.7.4 More Appealing and Modern Spaces

To create library spaces that are more appealing and modern, students and librarians interviewed made suggestions that can be grouped into technology, facilities, furniture, as well as comfort, ambience and image, as summarized in Table 4. 1.

Table 4.1: Facilities and Features that Would Make the Spaces more Appealing and Modern

Technology	Facilities
Smart boards	Discussion rooms
Computers	White boards
Laptops for loaning	Training centers
Play stations	Chat rooms
Big screens	PWD friendly facilities
Projectors	Refreshment space
Televisions	Innovation hubs
Charging cables	Exhibition space
Ear phones	Laboratories
Scanners	Child friendly facilities for new mothers
Printers	Nap/sleep areas
Strong Internet	Recreational space
3D printing	Reading Carrels
Robots	Moot court
	Presentation rooms
	Washrooms
	Lounge
	Makerspace
Furniture	Comfort and Ambience
Big tables	Better lighting – natural light
Open tables, no partitions	Appealing colors

Power and Internet ready tables	Snack bar
Soft seating	Water points
Newer furniture	Air conditioners
User friendly information desks	Natural plants
Comfortable chairs	Carpeting
Adjustable reading tables	Paintings and art on the walls
	Board games
	Music
	Aquarium

4.7.5 Planned Change

To see the direction libraries are taking in terms of space provisions, librarians interviewed discussed their plans as envisioned in their strategic plans. Findings indicate that some libraries had elaborate plans to recreate their spaces. One branch library had architectural plans in place to construct one more floor and to deal with a leaking roof. Another library had a new library plan that had been approved with construction already underway though at a very slow speed. Both its construction and furnishing were captured in the university's strategic plan. Other libraries had simpler plans like improving furnishings, developing facilities for PWDs, and conducting surveys to establish student space needs and desires. One library had nothing about learning spaces in its strategic plan, instead, it wished to actualize its initial plans like having a media station within the building.

Librarians explained that the changes proposed were necessary because of such reasons as space limitations brought about by student and collection growth; lack of interactive study spaces; open design of the current building that allowed noise to flow; shelves

occupying a lot of space leaving little for student activities; some provisions like study carrels being too few; the need to modernize buildings that were built before technology; and to address deficiencies in the current buildings like leaking roofs, poor lighting, and the small number of washrooms.

4.7.6 Redesigning Challenges

A number of issues were identified as challenges hindering or slowing the redesigning or repurposing of library learning spaces. Librarians stated that:

1. Due to financial constraints, space redesign projects or ideas could not be implemented;
2. Whenever such projects needed approval from decision makers, the approval process was lengthy and slow;
3. Sometimes there was resistance among decision makers which slowed the projects or made them get shelved;
4. The design of the existing library building could be challenging or expensive to repurpose;
5. Needs analysis and user studies were either lacking or poor;
6. When stakeholder involvement was not comprehensive and timely, buy-in was low and the success of the project was at risk;
7. Redesigning is time-consuming and could mean halting or shifting library services.

As a solution to some of these challenges librarians proposed seeking external funding through sponsorships; conducting space needs and expectations analysis of current

students; consulting widely across campus to get stakeholder buy-in; starting with projects that need minimal or zero budgets; undertaking big redesign projects in piecemeal so that services are not affected; and using internal expertise through collaborations to reduce costs.

Re-design projects within the last five years, in the libraries studied are minimal. They mostly revolve around reorganization of redundant collections. There were no deliberate changes made in the physical spaces to enhance student learning. Plans to redesign the spaces are also few, save for one library which has made advanced progress in the construction of a new library. Study participants provided space design considerations and desirable features which are in tandem with the trends indicated in literature. Clearly, students and librarians appreciate the need for the learning spaces to transform in line with changing needs.

4.8 Summary

The findings of this research indicate that library learning spaces in Kenya meet the basic learning needs of students. However, a number of student learning needs, styles and behaviors are not met. There is a lack of variety and insufficiency in the space provisions. Various aspects of space features and facilities that encompass technology, access, support, socialization, comfort, ambience and image of the learning spaces need improvement. Librarians and students have proposed changes that can be made to elevate the spaces and make them more appealing and inspiring for students.

CHAPTER FIVE

DISCUSSION OF THE RESEARCH FINDINGS

5.1 Introduction

This study sought to establish the status of library learning spaces in Kenya and their suitability for learning in the 21st century. Data was collected from four case libraries through observation of library spaces and interviews with participants who included librarians and student library users. The deep insights gained into student behaviors, the nature of the learning spaces and the activities therein is presented in Chapter 4. This chapter discusses the findings of the research. The researcher reviews the findings and provides their significance in relation to the existing literature.

5.2 Profiles of Librarian Participants

The participant librarians were a mix of male and female although looking at the university librarians or library directors, all the four were female with three having PhDs. This finding is in consonance with earlier studies that point to female dominance of the profession. A 1999 survey found that 57% of directors in academic libraries was female (American Library Association [ALA], 1999), Bobsinki (2007) reported that 82% of academic librarians in USA was female and, in the UK, Easton (2012) reported that in 2010 the percentage of female librarians stood at 83%. Similarly, Kwanya et al. (2016) studying the image of academic librarians found the expectation that a librarian is female was more than two times higher than the expectation that a librarian is male. In agreement, Mbambo-Thata et al. (2019) states that the number of women directors of university libraries in Africa has been on a steady rise. Despite the fact that librarianship seems to be dominated by women, it is possible that patriarchy and educational

imbalances are diminishing in the continent and that family responsibilities are no longer holding women back from career progression. Apart from library directors, the other librarians who participated in this study, held different positions in the libraries where they were in charge of a library section or a branch library but worked closely with students, providing learning support and managing the learning spaces. As section heads, they have the authority to make some decisions about learning spaces, they get to know how the spaces are used and can determine the level of support provided in the spaces.

Most of these librarians were over 40 years of age, held at least a master's degree and had been in their current positions for not less than two years. This means that they have been in the library scene long enough to gather sufficient experiences which combined with their high levels of education enable them to understand and appreciate the changing trends in higher education and in information work. Nonetheless, Lewis and Orr (2019) were concerned about the age demographics of the librarian workforce at the time, as it is likely to bring challenges to organizations. They observed that the large baby boomer generation (born between 1943 and 1960) was nearing retirement and would need to be replaced by Gen X (born between 1961 and 1981) and millennials (born between 1982 and 2004). Yet, it is doubtful that there is a sufficient number of leaders in these generations. The Kenyan librarian situation is such that Gen X is the majority and will need to be replaced by millennials who may not be having the requisite leadership skills and experiences. While it is true that most leadership opportunities come later in life, this study appreciates that the librarians in charge of student services and learning spaces have the capacity, given their positions and academic qualifications, to interact with students and faculty in a manner that can lead to the development of spaces and space

services that foster student learning. It is advisable though, that current leaders purposefully develop leadership among millennials to avoid future crisis.

5.3 Profiles of Student Library Users

Student library users participated in this research. Most of them were aged between 20 and 30 years, with a few under 20 years of age. This does not mean that there were no older student library users, the study mainly focused on undergraduate students who are the majority on campus and regarded as 21st century learners. Besides, the findings showed that three of the libraries had special arrangements for postgraduate students, who are likely much older, so it was easy to exclude them from the study. This study refers to this group of students as ‘Net Gens’ and defines them as born after 1990 with technology and the Internet explosion as the generation shaping factors. Several researchers (Farrell & Hurt, 2014; Cribb & Schmidt, 2011; Price 2009; Nicholas, 2008; Carlson, 2005; Oblinger & Oblinger, 2005;) describe this generation as technology dependent, multitaskers, visually oriented, restless, active and social learners, and constant communicators. According to the findings of this study as presented in section 4.3 of the preceding chapter, Kenyan student library users align with this description.

Additionally, there were more male students interviewed than female. This cannot be taken to mean that more male than female students use the library as the choice of study participants was random and the researcher did not make any efforts to strike a gender balance. Generally, a larger percentage of female students use the library as compared to their male counterparts (Herrera, 2016; Soria et al., 2015; Cox & Jantti, 2012). Existing literature does not provide any studies conducted locally regarding gender differences in

academic library use although a report by Kamer (2022) indicates that the number of male students enrolled in universities in Kenya has been consistently higher over the years compared to that of female students. In the Academic Year 2020/2021, for example, it was higher by 105, 043 while in 2021/2022 it was higher by 106,800. This could partly be the reason more male students were available to be interviewed. The students were distributed across the degree programs on offer in the universities. This is expected since the library as a neutral place on campus serves students from all the university's academic programs.

5.4 Status of Library Learning Spaces

Distinct differences were noted in the case libraries. Most notable is the age of the library buildings and the affordances in their spaces. Two of the library buildings were relatively new, built and launched in the new millennium, spacious and modern with technology integration and futuristic in design. The other two were older, built well before the technological advancement witnessed currently and meant for student populations that were much smaller. Their designs were fairly traditional, mainly dedicated to the housing of books and handing them out as well as providing quiet reading space. Noteworthy is the fact that the older buildings belong to public institutions while the newer ones belong to private institutions. This can be attributed to a number of factors. Public universities rely on government funding and are not at liberty to determine tuition charges. Private universities on the other hand, are free to generate funds from tuition and other financial avenues but unlike their public counterparts they have to compete for students. Their libraries and other campus infrastructure must be competitive featuring modern and well-maintained physical spaces infused with current technology. The financial health of the

parent institution determines the level of support given to libraries. In Kenya, funds to public universities from government have been dwindling. Odhiambo (2014) attributes the financial constraints experienced in public universities to cost-sharing and diminishing state capitation. These constraints have led to poor access, low relevance and quality of higher education in the country (Ndirangu & Udoto, 2011). Kavulya (2006) noted that funds to support libraries in the public universities have been on the decline. Ngetich et al. (2016) agree that funding of libraries is not a priority in Kenyan public universities since the funds provided by government to these universities are deficient. As such the quality of services has been negatively affected.

Despite these disparities, the libraries have made various efforts like installation of Wi-Fi, power outlets, computer labs, innovation hubs, presentation and exhibition spaces, and creation of postgraduate-only spaces among others, to attract and accommodate students into their spaces. This study, with a focus on how the existing spaces support learning in the 21st century, established that generally students found their libraries to be welcoming and conducive for their learning. The main explanation given was that they are quiet and without distractions. This concurs with the findings of May and Swabey (2015) as well as Cha and Kim (2015) who found that quietness in libraries is highly valued among students. No wonder, in all the case libraries, spaces for individual study occupy the largest area with a quiet or silent philosophy across board. Other types of learning spaces, where provided, occupied a small area with less emphasis and were largely regarded as peripheral as discussed in section 5.5 below.

5.5 Types of Learning Spaces Provided in the Libraries

The findings indicated that various spaces were provided in the libraries surveyed. This section discusses these spaces with an analysis of their contribution to student learning.

5.5.1 Individual Study Spaces

Individual study or reading areas were the largest and most dominant in the libraries. Students appreciate that they are quiet and without distractions. These spaces can be regarded as traditional since libraries have always been perceived as temples of knowledge, where quiet or deep silence is supposed to encourage concentration, focus, contemplation and reflection. For this reason, noise and any forms of distraction are discouraged, and even policed by guards and librarians. However, within these spaces some students were observed working in small (3-5 students) and large (8-10) groups though keeping the conversation low meaning that students desire group work spaces. This is a clear demonstration of appropriation of space and changed use as argued by Henri Lefebvre in his theory of Production of Space (1991). The quiet individual study space is the learning space as conceived by librarians and the observed conversation within these 'quiet spaces' shows resistance to the existing spatial practices, a change of use, created to fit the needs of the users.

Whether open or enclosed, individual study areas support students seeking privacy, quiet, silence and seclusion as well as those wanting to study alone but alongside others. There are also those without options or opportunities for study space on campus or elsewhere. This is in tandem with the findings of other scholars (Tavaniemi et al., 2015 Thomas et al., 2015; Yoo-Lee et al., 2013) indicating that students value quiet individual study

spaces in libraries. Harrop and Turpin (2013) also found that students prefer spaces where they are not likely to be disturbed but observed that not all students working individually wish to be in a quiet environment. Equally, Soria et al. (2014) reports that students may study individually but also engage in collaborative academic activities with others in the library. Given that today's teaching and learning approaches focus more on collaboration and group work, librarians in Kenya could consider including spaces that foster social learning in the libraries. Bennett (2015) notes that knowledge is created through collaborative learning in the library spaces and Kim et al. (2020) argue that the modern academic library has evolved into spaces where active and social learning take place as students interact. Therefore, while individual study spaces are required and necessary for learning in libraries, their dominance excludes other students, disempowers some learning activities and styles; it could be a cause of conflict among students or between students and librarians as some students may desire total silence while others wish to converse. Librarians could consider undertaking an elaborate needs analysis to establish how important these spaces are; what percentage of the users and potential users are supported; how quiet they actually are or ought to be; and explore how they can bring in other types of learning spaces for variety and increased inclusivity. By so doing they would allow the spaces to be created and recreated according to the desires and needs of the stakeholders in tandem with Lefebvre's theory that guided the study (Lefebvre, 1991).

5.5.2 Computer Labs /Resource Centers

Computer areas or labs were provided in all the case libraries though they were small and not well resourced with up-to-date software and hardware or maintained in a good working condition. As technology advances, more information and learning resources are

in electronic and online formats. Libraries have found it necessary to provide access points making computer access and use one of the primary reasons students visit libraries. These spaces are especially supportive to students who do not own smartphones or laptops. However, the sufficiency and efficiency of the computers seems to be questionable. Their use has to be monitored and regulated to make sure that it is academic. Students and librarians stated that they would be more satisfied if there were more and better computers available for student learning. This implies that access to computers in the libraries is deficient, the number of computers is small and their maintenance is poor. On the other hand, scholars argue that computers have been part of standard practice in libraries for more than thirty years (Thompson, 2012), now 40 years; from the mid-1990s they have been part of the Information Commons (Turner et al., 2013), a service model which is yet to be realized in Kenyan academic libraries (Musangi et al., 2019). Watson and Howden (2013) reported that the trend has been a technology-rich space which supports unrestricted use of computers and mobile devices. Thompson (2012) observed that the original focus of computers which was to provide access to e-resources has expanded to general-use computers supporting student research, from original resource discovery to the preparation of the final research paper. Libraries are now questioning the need to continue providing desktop computers when mobile technology is commonplace.

Kenyan libraries appear to be lagging behind with regard to providing flexible and integrated technology as students also complained about the small number of power outlets and poor Internet connectivity. Possibly, the perception of library use among librarians is yet to migrate from purely providing spaces for quiet study to include other

learning activities; computers are yet to be regarded as central to learning in libraries and given the right level of emphasis. Libraries are also experiencing financial struggles that have not allowed them to grow the number of computers available to students. A mind shift might be necessary so that a balance is achieved between investment in information resources and information access resources like computers. Also, students were concerned about the security of their devices within the spaces; librarians reported that students vandalize public computers meaning that there is need to enhance security in the spaces.

5.5.3 Discussion /Group Work Spaces

Discussion and group work were identified by this study as the two main academic activities that were not supported in the libraries. Students have to find other campus locations to discuss class work or undertake team projects. This is not supportive of the current approaches to teaching and learning which emphasize project-based learning and collaborative work. Cunningham and Tabur (2012) observed that a major trend in libraries at the beginning of the century was to increase the amount of space for group study. This trend has not ceased since Head (2016) found that many stakeholders, in library space projects completed between 2011 and 2016 in the US and Canada, highly valued the creation of collaborative learning spaces. This is confirmed by Kim et al. (2020) report that many universities have redesigned their libraries to include collaboration areas. Equally, Qazza (2021) found that learners regarded spaces for collaboration and interpersonal communication as very important.

The case in Kenyan academic libraries seems to be quite different. Perhaps the notion of the library as a quiet or silent place is yet to evolve. Librarians indicated that they would be more satisfied if they had spaces designated for discussion and group study in their libraries implying that together with other stakeholders, they appreciate the need to accommodate team activities in the libraries but are likely constrained by space, funds or the existing designs. However, one of the libraries had six discussion rooms; while this number is small compared to the number of students the library is meant to serve, it is a demonstration that libraries in Kenya are starting to acknowledge the need to uphold collaborative learning. Adding collaborative spaces to the already existing individual study space would provide more options for students, bring more students into the library, create opportunities for students from different disciplines to engage, even unintentionally, and ensure that spaces designated as quiet remain quiet. Hence, librarians can experiment with zoning and sound proofing such that their spaces are designated as quiet, silent or collaborative. Care should, however, be taken to ensure that collaborative or group spaces do not overwhelm or takeover provisions for quiet individual study.

5.5.4 Postgraduate Spaces

The case libraries tended to provide separate space or make special arrangements for postgraduate students. While these spaces are different in terms of what they provide and how they are managed, it is clear that postgraduate students are regarded as a special group and accorded special arrangements. Their spaces are relaxed with less control, fewer regulations, more provisions and better support from librarians. Generally, postgraduate students can be described as having very diverse needs given their demography, age, life-stage and program of study differences. In most cases, they have

multiple roles ranging from spouse, parent, student, to employee. It is, therefore, likely that librarians view postgraduate academic work and life as demanding; the need to stay in the library for long and varied hours, undertaking many different activities behooves librarians to create spaces that are more comfortable and flexible. This variety of need is consistent with an ethnographic study of graduate students at Florida State University by Kinsley et al. (2015) assessing their library space needs. They found that graduate students desired multiuse and multifunctional space that fell into four categories: quiet work, group work, computer-based work and relaxation. This is also reflected in the findings of Kekana (2016) that describe the needs of postgraduate students as paradoxical since they require silent and private spaces and yet express need for group and social spaces.

Another reason for separate postgraduate spaces could be that postgraduate students are generally older in age, more focused, not likely to engage in behavior that is disruptive and may not want to mix with the 'restless' undergraduates. The study of Kinsley et al. (2015) also found that graduate students valued graduate-only spaces that differed from the social spaces that interested undergraduates. They described the spaces as enabling focused intensive study and motivating since one is surrounded by other graduate students who are serious. Nevertheless, findings from this study indicate that these graduate-only spaces are the envy of undergraduate learners as they would like to enjoy the same freedoms and may not understand why the same cannot be extended to them.

5.5.5 Non-library Spaces

Disparate spaces like conference rooms, innovation hubs, presentation rooms and exhibition areas were found in one of the libraries under study. One other library also had a conference room. This finding was not unexpected since there are reports that the trend in academic libraries is to become a Learning Commons where technology and people are brought together to create knowledge collaboratively in a social environment (Thomas et al., 2015; Wong, 2014; Turner et al., 2013). These spaces can be described as non-library since they were not traditionally located in libraries and may not be regarded as directly impacting student learning since their activities are outside ‘quiet study’ or ‘access to information materials’. They are run by librarians or non-library partners like Student Affairs, and serve to provide an array of services. They can be useful in hosting workshops, meetings, hands-on training and for practicing presentations. They provide opportunities for co-curricular learning, fostering creativity and innovation. For example, the innovation hub found in one of the libraries is a product of external funding and is run by a non-library committee though the university librarian is part of the committee. While it is yet to open its doors to all students, its location at the library is a demonstration that the library is viewed as a place for knowledge creation and production. The presence of conference and meeting rooms in the library gives the library visibility and affords scholars a chance to engage, share knowledge and connect. The exhibition space, in as much as it is currently used to display new print materials, can be used to recognize and highlight the achievement and expertise of students and other members of the campus community as indicated by Cunningham and Tabur (2012) in their hierarchy of space

desires. Clearly, academic libraries in Kenya, while not at the same level or pace, are making strides towards becoming learning hubs.

The mere provision of these spaces, although only observed in one out the four cases, means that there is an appreciation and expression of the changing role of libraries in the 21st century. Besides, librarians who participated in this study expressed their desire to have these spaces in their libraries. One library already had well laid out architectural plans that include these spaces. It is possible that their achievement is hindered by such factors as being seen as peripheral to student learning, the high financial investment required and existing space constraints. Where these spaces are already part of the library it was notable that they are yet to welcome and include student activities. For example, the exhibition space is used to display new books, the innovation hub is meant for a few select students, and the conference rooms are for campus-wide meetings which are mostly exclusive of students. These spaces are yet to be treated and packaged as go-to spaces for students. It is clear that what the space planners perceived and conceived is yet to be actualized an indication that Lefebvre's triad of Perceived-Conceived-Lived spaces may not operate at all times as posited by Lefebvre (1991). These spaces seem to be within the domain of the planners though an analysis of the value they could bring to student learning would help librarians and other stakeholders to design, service and position them better.

5.6 Other Learning Spaces of Choice

This study found that apart from the campus library, students use halls of residence, classrooms/lecture halls, laboratories, homes, cafeterias, open spaces on campus and

student centers for their academic activities. These informal learning spaces are chosen for their comfort, friendliness and reduced control or fewer rules. In these spaces students can talk, eat and drink as they work, individually, alongside others or collaboratively. This is consistent with the findings of Souter et al. (2010) and more recently Anggiani and Heryanto (2018) that many informal learning spaces including the library serve as locations for students to learn freely, independently or together. They are often described as friendly, inviting, comfortable, flexible, flowing, interactive and accommodating.

Unlike other informal learning spaces, the libraries in this study were reported to be having restrictive rules and not accommodative of discussions or group work. It is no wonder that students have other destinations for their learning and possibly the libraries only accommodate a small percentage of the student population. It is time for these libraries to consider flexing their rules, especially those around what can and cannot happen within the spaces, and developing a range of spaces to allow students choice depending on their learning needs and nature of activities. It is possible that most library use rules and regulations are age-old and have been carried over through the years without much examination of their value especially in the changing contexts and environments. This study did not delve into the nature and variety of provisions and facilities or attributes of these non-library informal learning spaces but it is obvious that more monetary investment goes into libraries in universities. An academic library is purposively built, its location, learning materials and supporting facilities are meant to facilitate learning outside the classroom. Thus, every effort should be made to ensure that the whole spectrum of student learning needs, preferences and activities is supported and that the library is seen as accommodative, inclusive and also popular among students.

5.7 Most Supportive Space Features/Attributes

An examination of the affordances, features or attributes of the spaces provided brought into focus once again the marked differences between newer and older library buildings. Indeed, many scholars report that there are changing space trends and many libraries have new and revamped library spaces that are bold, flexible, accessible and varied, contemplative, interactive and collaborative, well organized, efficient, and suitable for technology (Head, 2016; Ellison, 2016; Cha & Kim, 2015; Harrop & Turpin, 2013; Bryant et al., 2009; McDonald, 2006). Clearly, academic libraries in Kenya are lagging behind; there are steps in this direction though not at the same pace. While some are fairly new and modern as witnessed in two of the case libraries, others are at various stages of either planning or implementation like in one of the case libraries where the construction of a new library building has been flagged off.

Regarding space attributes that are supportive of their learning, students reported that they valued the 'quiet' or 'silence' in the libraries. This finding is similar to other studies like that of Oliveira (2016) which reported that students valued silence to a high degree and the observation by Head (2016) that in designing libraries, architects and librarians struggled with reducing noise in response to users' complaints. It is possible that among the informal learning spaces across the campuses, the library is chosen for its 'no noise' policy. Equally, students in this study observed that the other informal learning spaces can be 'too noisy'. However, in pursuit of silence, care should be taken when designing libraries not to leave out the social aspects of learning and to accommodate those students who may find the spaces 'too quiet' like in the case of Bennett (2007) and those wanting to work collaboratively.

Other supportive space features like cleanliness, natural light, good air circulation and furniture comfort were reported to be working well in some of the libraries and wanting in others. Students' desire for better chairs, more natural light, flowing air, and clean spaces including restrooms is an indication that they would like to learn in a space that provides physical comfort and where their physiological needs are met. This is somehow in agreement with findings from a survey conducted by Cha and Kim (2015) where amount of space, level of noise, crowdedness, comfort of furnishing and cleanliness were identified as the main attributes that influence choice of a learning space. Although students in this study did not seem to worry about the amount of space, librarians wished for more space especially during intensive use periods and so as to be able to provide more options of study space. Furniture comfort was described by students as soft chairs and not the hard and cold wooden or metallic chairs provided in most of the libraries. Other desirable furniture characteristics like variety, mobility and adjustability as identified by Andrews and Wright (2015) did not emerge. Clearly, students in this study desire basic comfort unlike students in Andrews and Wright (2015) who wanted lounging, reclining or relaxed chairs, straight back chairs and tables in a variety of sizes, shapes and heights; or in Twait (2009) whose needs and desires included longer couches where they could take power naps. It is possible that the view of the library as a learning space among Kenyan students is still conservative and that such variety in furniture provision is yet to be seen as necessary or viable. Librarians on the other hand, as reported in Section 4.2.7 of the foregoing chapter, desire a variety of comfortable furniture. This implies that they appreciate the need for variety in furniture provisions and

that its absence in the libraries could be due to space and financial limitations as discussed earlier.

Technology related space attributes like availability of the Internet and power outlets were cited by students as determinants of learning space choice and satisfaction. Students said that they visit the library to access the Internet and Wi-Fi, and that they would feel most supported if these were stronger and stable along with more power outlets and computers. In agreement, other scholars report that availability of computers and low-tech features are among the generally-accepted space attributes that affect space choice and user satisfaction (Cha & Kim, 2018; May & Swabey, 2015; Montgomery, 2014; Yoo-Lee et al., 2013). Unlike this finding, Andrews and Wright (2015) found that over and above low-tech features, power outlets and whiteboards, students desired higher end technology like smartboards, tablets embedded in tables, document cameras, multi-touch wall surfaces, media players and an iPad library. Comparable to this study, Head (2016) found that sufficiency of power outlets for students to charge their IT devices was a common challenge discussed by librarians. There does not seem to be adequate power outlets or a strong enough Wi-Fi in any library. Student technology needs are many and shifting, the nature of the devices they carry is in constant change and on the increase. This means that libraries have to make continuous efforts and investments to meet these demands including retrofitting especially for older spaces like the ones witnessed in two of the case libraries. It is likely that once Kenyan student library users have sufficient power outlets, computers and a good enough Internet, their demands will shift to higher end technology in agreement with the Lefebvrian theory that spaces are continually produced.

There was a noted emphasis by some study participants on nature and bringing the outside in or a view of the outside. In the newly built libraries, students appreciated the big windows, natural light and the presence of plants in the spaces. Where these have not been achieved, students and librarians expressed their desire and even proposed rearranging the stacks to allow more natural light and reduce the shadows. Variety in color and art on the walls were suggested as other features that would increase ambience in the spaces. Participants also wished water features like fountains, ponds and aquariums could be included in the spaces. There is no doubt that students would like to learn in a space that is functional, comfortable and relaxing. Besides, these are features that have been achieved in several libraries across the world and found to influence space-choice, overall satisfaction with learning spaces and even reduce library anxiety (Nieves-Whitmore, 2021; Cha & Kim, 2018; Harrop & Turpin, 2013; Riddle & Souter, 2012; Dugdale & Long, 2007).

5.8 Interaction and Socialization Space

None of the case libraries provided space for socialization and interaction. This is inconsistent with reports by such scholars as, Wu et al. (2021), Crook and Mitchell (2011), Bryant et al. (2009) and Oblinger (2006) who observed that the campus physical infrastructure including libraries is being redesigned to enrich the formal learning experience by accommodating a more socially-interactive notion of study, social exchange, unplanned social encounters and to catalyze socializing. The expressed desire by students and librarians for social or recreational spaces aligns with the finding of Mathews et al. (2011) where students were drawn into social learning spaces by the comfortable furniture, regulated temperature, openness, food facilities and large tables.

Possibly, students in Kenyan universities do not have socializing as an objective when going to the library but they appreciate a place where they can take a break from their studies, relax, catch up with friends and news, and also re-energize. This is particularly important for those wanting to sit for long hours and where the library is located away from other social amenities. It is also possible that students fear to lose the mood and time if they have to go far for their breaks and/or refreshments.

Including spaces for socialization and interaction in Kenyan academic libraries is likely to cater for more needs and make the libraries more appealing to students like the case of American 1970s academic libraries which by allowing food and conversation, within limit, brought back the undergraduate student into the library (Seal, 2015). Social spaces can also bolster participative, interpersonal or collaborative quality of education as promoted by employers and social constructivist theories of knowledge. Also, in line with the findings of Mathews et al. (2011), providing spaces to socialize and relax, gives students an opportunity to establish friendships and social networks which in turn enhance their sense of belonging. Besides, too many restrictions define the spaces as highly controlled and bear the risk of being left vacant. Instead, libraries should embrace the relational concept emphasized by the Production of Space theory, as it allows space users to participate in the establishment of spatial structures making the spaces flexible and changeable.

5.9 Frequency of Library Visits

The findings of this study indicate wide variations in the frequency of visits and duration of stay at the library by students. Students are either regular visitors, going into the

library almost every day and staying for long hours or short periods; or rare visitors, visiting during the examination period for extended hours or briefly at different times of the semester to borrow or consult course texts. Such irregular patterns of library use have also been observed by Yebowaah and Sanche (2021) as well as Beard and Bawden (2012). It is important to note that this study did not investigate the link between the frequency of use and individual factors like degree program, age or gender as the students explained that library visits depended on their schedule or level of commitment which change as the semester progresses.

The varied frequency of library use can be attributed to such factors as degree of study or discipline, year of study, time of the semester, availability of other learning spaces on campus, nature of study habits and individual differences like the home or halls of residence environment. Puarungroj et al. (2018) and Larasati et al. (2019) found that fourth year or students nearing the end of their degree programs visited the library more than first year students. Collins and Stone (2014) investigated disciplinary differences in library usage at the University of Huddersfield. While the study revealed significant differences, the researchers point out that they were not the same as those identified in previous studies and recommended an institution-by-institution basis analysis. Further, Larasati et al. (2019) observe that generally students visit the library more when they have assignments or are in need of references; otherwise, they found that nine factors: year of study, faculty, department, Internet availability, safety of bag storage, hospitality of staff, comfort of reading rooms, OPAC use convenience and book lending services highly influence the frequency of student visits to the academic library. Among these factors, Internet availability, seemed to determine how frequently students

in this study visited the library. There were mentions of friendliness of staff and security of items in the baggage area in some of the libraries.

Library visit or use has been linked to student outcomes or success factors like retention and performance by various scholars (Scoulas, 2021; Kuh & Gonyea, 2015; Soria et al., 2013). In as much as students in this study highly attributed their academic success to the library, research that specifically links library use to academic achievement among students in Kenyan universities was not found in literature. It could help librarians to understand what aspects of library services and resources need to be adjusted for better support of student learning and success. Equally, the percentage of the student population that uses the library like in the case of Goodall and Pattern (2011) who found that more than half of university students in the UK have never visited the physical library or used library resources is not known. It would be important in demonstrating the value of the library as a learning space and the need for continued investment or re-engineering of services.

5.10 Learning Space Activities

Through interviews and observations, this study found that students use library learning spaces for individual and collaborative academic activities. These activities largely align to the reasons why people go to the library as identified by Demas (2005) and the learning behaviors provided by Bennett (2011); save for class related or non-course activities and research projects that involve faculty members or mentors. Similar to the findings of Jordan and Ziebell (2009), students also engage in non-academic activities

like listening to music, watching non-academic videos or movies, social media, chatting with friends, sleeping and snacking within the spaces.

Students in this study seemed to seek isolation and silence unlike the findings of Bedwell and Banks (2013) where students sought community and quietness even when wanting to study alone. This learning behavior is identified by Bennett (2011) as studying along and is supported by the findings of other studies (Tanacković et al., 2014; Bennett, 2007; Head & Eisenberg, 2011) stating that Net Gen students may seek learning spaces that are distraction-free yet have some noise and activity. It is possible that Kenyan university students are accustomed to the cardinal 'no noise' rule in libraries, with libraries being seen as areas for isolation or that they seek libraries to escape the noise found in other learning spaces. No wonder, most of the students interviewed said that they consider the library conducive for their learning as it is always silent and devoid of distractions.

Repurposing was observed in the spaces despite the prohibitions set-out in the space use rules. This is in tandem with the findings of Tanacković et al., (2014) where a quiet study room was also being used as a social space and the confirmation of Ngoc (2015) that students desire some level of control in the learning spaces. However, unlike the findings of this study, Ngoc reports that the commonest customization was the rearrangement of furniture. No furniture rearrangements were noted in this study most likely due to the nature of the furniture provided or the level of domination exercised by librarians and messages carried by the designs. The flouting of rules or using of spaces for purposes other than those intended by learning space designers and managers is an indication that students need spaces they can recreate to suit their needs and that libraries ought to

provide spaces that support a range of academic and non-academic activities that form part of what students do while studying. This aligns to the lived space concept in the Production of Space theory by Lefebvre (1991). Students as learning space users do not seek to follow the intended use of the spaces as set out by space planners and managers, instead they put the spaces to a use that fits their needs at the time.

5.11 Learning Space Preferences

This study found that students chose their ‘study spot’ in the library guided by what they described as ‘most supportive features or attributes’ in Section 5.6 above. Noting that the case libraries are variously limited in terms of variety due to size, design and space use philosophies, students sit in areas where desired levels of technology access, comfort, privacy, freedom and noise can be achieved. Elsewhere, these have also been identified as key though not necessarily the topmost drivers of space choice (Andrews et al., 2016; Beatty, 2016; Ngoc, 2015). Indeed, Net Gen students as observed by Lippincott (2012) as well as Farrel and Hurt (2014), are immersed in technology, digital content and social media. They use these tools extensively to connect with others, to learn and to create knowledge. It is possible that if libraries in Kenyan universities were to afford equal distribution of the Internet and power outlets throughout their buildings, then other factors would emerge top as space choice considerations leading to more spreading out as opposed to the clustering witnessed in the libraries under study.

Space preferences related to comfort, privacy, freedom and noise tend to vary greatly. It is possible that a student can want a space that is open and communal today but seek total isolation tomorrow depending on the task at hand. The same goes for furniture

preferences and noise levels. Evidently, student learning wants and needs vary from student to student, from semester to semester and even across different periods of a semester. Appreciating the wide spectrum of needs and individual differences, this study, just like other previous studies (Andrews et al., 2016; Oliveira, 2016; Ngoc, 2015; Hunley & Schaller, 2014; Harrop & Turpin, 2013; Bryant, 2009) brings to the fore the need for variety and flexibility in learning space designs and provisions. These features serve to motivate learners and are likely to support a wider array, if not the entire continuum, of student needs today and even into the future. Oliveira (2016) observed rightly that the provision of numerous learning spaces and support for diverse learning styles empowers the creation of continuously effective library spaces. Beckers et al. (2016) argue that designing spaces that satisfy everyone may be difficult, owing to the diversity of needs, interests and expectations among students but not impossible. Kenyan librarians and other stakeholders should, therefore, consider moving away from the current ‘one size fits all’, towards such approaches as zoning to cater for more wants and preferences. This will require an elaborate needs assessment since libraries are at different levels of space development, and benchmarking to understand what has worked well elsewhere.

5.12 Rules Governing Behavior

Rules and regulations to govern behavior in the learning spaces were reported to be in use in all the case libraries. Librarians seek to regulate behavior in the spaces to ensure that the spaces are used for the intended purpose and also to reduce distractions since ‘no noise’ was the number one rule across the libraries and the most violated. This is likely a problem because what librarians view as acceptable space use and atmosphere may not

agree with the views of students. Besides, only one out of the four libraries provides discussion rooms. Libraries are changing, students are changing and as noted by Yelinek and Bressler (2013), technology has changed the traditional quiet study room that the library was. The shift has been towards fewer books given the increase in use of e-resources and more seating; an open design which Anderberg et al. (2018) say is in contrast with student desires for quiet.

Open floor plans like the ones witnessed in the case libraries present challenges when dealing with noise issues. Moving shelves away or to the sides to create open, airy and well-lit communal spaces works against the fact that shelves can dampen noise and provide areas that feel private without being isolated. It becomes even more paradoxical when students desire quiet libraries but also want to socialize, interact and collaborate in the same libraries; that some students want silence while others do not want it to be too quiet. No wonder, Yelinek and Bressler (2013) explain that Net Gens have grown up with more choices in the services and products they use and as such, they expect more options, personalization, and customization. Libraries in this study have tried to deal with noise by putting rules in place, through signage and by policing the spaces. No noise, unfortunately, is not what all users want all the time, some, especially those wanting to work in teams, vacate the library spaces or stay and disturb those wanting to study quietly. To solve the noise problem, Yelinek and Bressler (2013) reported that libraries have explored development of zones, rearrangement of furniture, written policies, signage and peer policing. Clearly a multifaceted approach is necessary and since noise level can determine the use of a learning space, librarians must find ways to accommodate all students.

Apart from noise, the other common rule across the case libraries has to do with prohibition of food and drink. Traditionally food and drink has been banned in libraries and librarians defend these policies because of the potential risk to collections and preservations. It is not odd that today, academic libraries in Kenya prohibit food and drink. Kawamoto and Tsuji (2016) reported that 37.7% of academic libraries in Japan prohibit food and drink. However, it is noteworthy that as the view of the library as a social and meeting place has advanced, the design of libraries has changed. Reports from as far back as 1998, indicate that rules and policies regarding eating and drinking have been relaxed to improve the image of the library and to make users more comfortable (Bancroft, 1998). In agreement, Shill and Toner (2004) observed that between 1995 and 2002, the percentage of academic libraries offering food and drink grew from 7.5 % to 32.4%, an indication that food and drink policies are under scrutiny. Besides, students in this study stated that they would be more satisfied if they had access to food and drink within the library which corresponds with the findings of Anderberg et al. (2018) that Net Gen students expect to be allowed food and drink in the library space. Considering that Kawamoto and Tsuji (2016) found that libraries that allowed food and drink experienced increased traffic and usage, is it possible that the strict ‘no food’, ‘no drink’ rules in Kenyan university libraries are keeping away students?

The quiet ‘no noise’ ‘no food or drink’ library is what Lefebvre (1991) in his Theory of Production of Space refers to as the ‘conceived space’, what librarians want to achieve; dominated space with no room for alternative uses. The possibly ‘noisy’ library that has eating and drinking going on its spaces is what Lefebvre calls the ‘lived space’, one that has been created by students and not dependent on the rules and structures in place. What

is needed in Kenyan academic libraries is a relational view of learning spaces, a harmonization of the views of librarians, other space planners as well as student needs and desires to create spaces that are conducive for student success and achievement of 21st century learning goals. Lankes (2012) observes that libraries are transforming from the domain of librarians to the domain of communities. Yelinek and Bressler (2011) point out that academic libraries are not likely to be free from noise and recommend that librarians find ways to accommodate all patrons, whether they desire 'loud' or 'quiet'. It is likely that a review of noise, food and drink policies can increase the number of students visiting the library and the length of their stay.

5.13 Centrality of Print Resources

The extent of reliance on print collections is part of what majorly determines how a library is viewed and how its space is apportioned and designed. This study found that print resources are generally considered central to learning though the shift to electronic resources is inevitable, fast approaching and likely to influence the design of library space. This is unlike studies conducted by various scholars (Li, 2016; Rose-Wiles, 2013; Kolowich, 2011) that signal the declining use of print books, cancellation of print subscriptions and increased investments in electronic resources. However, the findings are tandem with what is reported from Africa. Nkekubwa, (2016) just like Mawere and Sanga (2016) observe that while electronic resources are of increasing importance, some users still prefer print and that their access is limited owing to low ICT use skills and inadequate infrastructure. Similarly, Pešut and Živković (2016) and Cummings et al. (2015) found that print is generally preferred but the electronic format is used for its practicality, speed and availability. Clearly, there is an ongoing shift in collections from

purely print to a hybrid model encompassing both print and electronic formats. Electronic resources are gaining ground and students are willing to adapt to the e-book.

It is worth noting that electronic resources are already influencing library space designs in Kenya; all the libraries surveyed reported that they have moved stacks that were meant for periodicals, which now exist electronically, and repurposed the spaces. This is a trend that is not likely to slow down. As reported by librarians, there are more budget approvals for e-books and a significant amount of librarian-time is spent training students on how to access e-resources. With increased e-resources and remote access, librarians have no option but to start to rethink the design and philosophy of the library's physical space. It is possible that with the possibilities of remote access and online reference services, fewer and fewer students will choose to come into the physical library space. The library risks being reallocated for use by other non-library departments since the university real estate never seems to be enough and in line with the theory of Production of Space that a space may outlive its original function and risk being vacant or get diverted to other uses. Thus, librarians have to be ready to claim the centrality of the library, including the physical learning space, in the campus environment and to student learning. To repurpose space successfully, librarians will need to obtain circulation data and user feedback to guide decisions regarding investments in print resources and space use.

5.14 Librarian Support

The nature of learning support provided in the learning spaces by librarians and desired by students can be described as basic. It comprises orientation, provision of general information and access to resources with instances of training, research support and

technology help. This agrees with what Donkai (2011) refers to as traditional and witnessed in most libraries in Japan. Equally, Ducas et al. (2020) reported that librarians in research-intensive universities in Canada offer services that are largely viewed as traditional though they are taking up newer roles. It is possible that librarians offer what their skills, resources and time allow. Also, it is an indication that the timeworn storehouse view of libraries, where services are organized around the collections and not users, abounds.

It is time that librarians reconsidered the services they afford their students. Felix (2011) points out that services within a learning space determine the nature of learning experience a student will have. Further, he explains that modern learning spaces provide innovative services that range from writing support, technology tutorials, research consultations to social events. This suite of services, while not provided in the libraries studied, Felix (2011) explains that they have been achieved elsewhere as exemplified by the Weigle Information Commons at the University of Pennsylvania and the Learning Grid at the University of Warwick among others, where events, workshops and consultations are the norm. This means that innovative services should be a major consideration as Kenyan academic libraries evolve to become true learning centers.

It is not unexpected that librarians in Kenyan university libraries only offer basic support for learning. What is worrying is the fact that some students do not know librarians, have not interacted with librarians or received help from them. In as much as it is possible that some students feel independent and get their way around, librarians should be proactive and endeavor to offer cross cutting services that make them felt and valued by their

customers. The value, knowledge and skill invested in them could be what is needed to bring learning and vibrancy into the library space. It is possible that students are unsure of librarians' roles, which makes it the librarians' duty to shape their roles and foster the kind of learning that should be achieved in the learning spaces through innovative services. This would move Kenyan academic libraries closer to an Information Commons which Beagle (2006) described as a service-rich milieu organized in support of learning. Also, according to Oliveira (2017) an Information Commons has student access to librarians and ICT experts as one of the four basic features. In this space, librarians would not just focus on helping students to manage information, as is the case, they would go further and help them to manage their learning through an assortment of programs and services.

5.15 Skills and Knowledge Among Librarians

Generally, participants suggested that 21st century academic librarians need to be tech-savvy, good researchers and teachers, familiar with the web and the online environment, and able to communicate and relate well with their customers just as established by previous research (Davis & Saunders, 2020; Baro et al., 2019; Chawner & Oliver, 2016). It is expected that librarians play a role that is more than handing over books or pointing users to resources. Simon (2013) describing Information Commons says that a successful visit to the library would entail ready access to staff who are knowledgeable and tech-savvy. Not to say that traditional skills have no place in the 21st century, what is required is a combination of traditional skills and web 2.0 competencies (Oyieke & Dick, 2017) for librarians to be able to gain confidence in their information work and to participate in knowledge creation and dissemination activities. Indeed, changes in technology, shifts in

pedagogy and the vast increase in sources of information and data have implications for skills and knowledge of information workers in Kenya just like in the rest of the world.

Defining competencies as traits or characteristics that bolster excellence in a profession, librarians and students in this study listed adaptability, flexibility, open mindedness, helpfulness, proactivity, critical thinking, willingness to learn and empathy as competencies that librarians need to have. These align with what Patridge et al. (2010) refer to as soft skills in their paper titled 'becoming librarian 2.0', Saunders (2015) in his analysis of employer perspectives of Library and Information Science education and Kwanya et al. (2016) in their study of the image of academic librarians in Kenya. These desired competencies do not come as a surprise neither are they unique to the Kenyan academic library scene. They are indicative of the changing information and higher education landscape as well as the differences that exist among today's students. Undoubtedly, librarians will need to continuously and proactively learn and adapt to the shifting teaching and learning approaches, new learning environments, constantly changing technology, multiple formats and varying user needs and demands as they seek to develop 21st century library learning spaces.

To acquire the said skills and competencies, librarians interviewed proposed participation in workshops, trainings, conferences, networking with colleagues and self-learning as well as a review of library school curriculum. Ideally, these are the traditionally established means for professional development. Some studies have explored the possibilities of an industry or practice informed curriculum (Saunders, 2015; Singh & Mehra, 2013;) as part of getting library workers rightly equipped. The time is right for a

Kenyan study analyzing content taught in LIS programs and how it aligns to the needs of today's academic librarianship. Equally, trainings, workshops and conferences organized by employers and professional organizations need to begin with a needs analysis and an understanding of the abilities and interests of library staff as well as the direction of the academic library. This is likely to prepare librarians to take up new roles and to establish library spaces and services that foster learning.

5.16 Collaboration with Campus Units

This study established that students and librarians alike, acknowledge and appreciate the learning support provided by other campus units or departments. However, none of the libraries surveyed has in place a well laid out collaboration or structured working mechanism with these units even where the units are housed within the library building. The consultations and referrals that happen are impromptu, an approach that is yet to meet the aims of a Learning Commons, a form of 21st century learning space, which Bailey and Tierney (2008) described as integrative, collocating services that are located outside the library.

Library learning spaces in Kenya are yet to become one-stop learning hubs where campus departments are brought together in support of learning. Traditionally, librarians have worked with teaching departments to identify course relevant information materials or to deliver Information Literacy programs. Bringing services together, within the library space, in support of student learning can be described as an emerging area of academic library practice and various scholars (Ozburn, 2020; Elliot et al., 2018; Oliveira, 2017; Jackson, 2017) laud collaborative learner-centered approaches as enriching to learning in

library spaces. As earlier stated by Henrich (2013) the central location of resources and services, lowers barriers that hinder students from seeking help. As a move away from the storehouse view of the library, academic librarians in Kenya need to consider making the existing working relationships more structured and work towards having a variety of service points within the library spaces. Also, new relationships can be sought once the gaps in learning support within the spaces have been identified and good candidates for collaboration considered. Acknowledging that staffing may be a challenge, libraries could explore getting additional support from well-trained student workers and volunteers, a peer model that has been seen to work as revealed by the studies of Webb (2020), Webb (2018), as well as Schmidt and Kaufman (2007). This would enable the development of a set of services that cater for students' writing, research, technology and special needs in one location.

5.17 Recent Changes and Planned Change in the Library Spaces

The findings of this study indicate that changes made recently in the library spaces are minimal and mainly occasioned by growth in the number of electronic resources. Electronic journals have slowly replaced print journals in all the libraries surveyed and caused the repurposing of what was previously designated as 'periodical space'. It is clear that librarians have seized the opportunity to bring in comfort and other uses like leisure reading or meeting needs like those of graduate students and PWDs; an indication that the relationship between the academic library and students is changing; librarians seem to be moving away from viewing the library as a collection warehouse towards regarding the library as a learning and student space. This is not unique, other scholars, Epstein (2017) as well as Dew and Crumpton (2012) record the decline in print collections and the

repurposing of collections space to create public seating and study space. It is notable that most of the repurposing observed in Kenyan academic libraries does not proceed from what is needed, it happened due to redundancy. It has not been done purposefully to create new services as is the case with libraries in the developed world which have for example redeveloped library space to provide new technology services like 3-D printing (Jantz, 2012). It is possible that librarians appreciate the need for repurposing that is based on a needs analysis and focused on learning but face various constraints as discussed in Section 5.3. In fact, librarians in this study report that most of these changes were zero-budget and in-house, they advocate the need for change that can cause the generation of learner friendly environments.

It is impressive that libraries are looking beyond their walls and seeking ways to support students who gather around their buildings to access the Internet. Since this study did not go beyond learning spaces within the library building, it would be interesting for librarians to investigate why students prefer to access the Internet from outside the library even when the library doors are open and space is available within. Exploring ways to accommodate them within is important as it could be a gateway to increased and sustainable access and use of resources in all their diverse formats and the development of meaningful relationships among library users and between users and learning support staff.

Planned change in the libraries as regards space, whether new construction or redesigning, revolves around modernizing and resolving the deficiencies of the current buildings. While an enriched student learning experience may be the outcome, it was not

cited as a reason for the intended change. Elsewhere, various scholars (Saragossi et al., 2020; Vogus & Ferderiksen, 2019; Chan & Spodick, 2014; Hurst, 2013; Fox & Sidorko, 2013; York et al., 2010) report that academic libraries are intentional about learning and have transformed their spaces to meet the research and learning needs of their students and to accommodate new and evolving library services and functions. One library though, intends to undertake surveys to understand space needs which shows that Kenyan librarians are cognizant of the shifting needs and expectations and would like to be responsive.

The study also found that there were various issues that hindered or slowed space repurposing in the case libraries. Majorly, these had to do with low budgets, if any; bureaucracy in the institutions leading to lengthy approval processes; low buy-in and resistance from some of the stakeholders; insufficient needs analysis; and the fact that space changes can be time consuming and could require that services are halted. These challenges are not entirely atypical, financial challenges can be attributed to the financial health of the parent institution and librarians suggest seeking other funding avenues. A look at academic libraries which have implemented new learning spaces reveals financial, architectural and ICT related challenges. Beard and Dale (2010) cited the need to accommodate both individual and social learning as a challenge, similar to the observation by Chan and Spodick (2014) that catering for the variety and diversity of student needs in terms of spaces, equipment and furniture in support of study, discussion, flexibility and relaxation, all in one place is challenging. Head (2016) studied 22 learning space projects and the implementation challenges noted include: converting design goals into tangible designs; ensuring effective communication across the planning teams and

constituents; building consensus; inadequate knowledge of architecture and library IT; and insufficient evaluation metrics. While these challenges differ from those experienced in Kenyan academic libraries, it is important to note that none of the case libraries has had elaborate projects aimed at redesigning spaces to meet the changing learning and research needs of students.

5.18 Factors to Consider When (Re) Designing

Various suggestions emerged from this study as factors to be considered when designing or re-designing library spaces for 21st century learning. Study participants advised that designers should seek to provide: variety in terms of furniture, color and space types; access to food and drink; for the range of student needs, ideas and expectations; sufficiency in terms of resources; ambience with regard to air circulation and natural light; training and support space; technology support especially the Internet and power outlets; and location of the learning space. These factors align with the four characteristics for generating desirability presented by Kent and Myrick (2003); the hierarchy of learning space attributes mapped from Kent and Myrick's four characteristics by Cunningham and Tabur (2012) and the more recent list of salient features of a library learning space provided by Farmer (2016). Specifically, the consideration of student needs when (re)designing is also brought out by the studies of Choy and Goh (2016) and Head (2016). Evidently, students and librarians in this study have an understanding of the shape and direction learning spaces designed in the 21st century should take. Likely, a number of issues hinder the establishment of learning spaces in Kenyan academic libraries, where students can thrive academically. Librarians and other stakeholders should endeavor to pare these hindrances and transform their

libraries into active and popular learning hubs. ODonell and Anderson (2021) refer to the ongoing reinvention and refocusing of the academic library as a global phenomenon and Kenyan academic libraries are not to be left behind.

5.19 Student Involvement

Across the case libraries, students and librarians agreed that there is need to involve students in the design, redesign or repurposing of library learning spaces as they are the main stakeholders and beneficiaries. Librarians reported that students have not been part of the changes made or intended in their libraries. If there has been any involvement, it has been through student leaders. This is unlike the practice of many libraries. Cases of student participation are discussed by many scholars (Nieves-Whitmore, 2021; Zhu, 2021; Scoulas & Groote, 2019; May & Swabey, 2015; Cha & Kim, 2015; Montgomery, 2014) who argue that their involvement ensures the development of services and spaces that are aligned to student academic requirements. By studying how students use the library space, their activities therein and collecting feedback and perspectives, librarians and other space planners stand a chance to keep the library design relevant and efficient to its users. Just as suggested by librarians interviewed, such approaches as ethnography, participatory design, surveys, interviews and observations have been used to gain student input (Meunier, 2020; Deed & Alterator, 2017; Montgomery, 2014).

The witnessed lack of student involvement in library space designing and planning implies that academic libraries in Kenya are dominated spaces. Space providers, in this case librarians, seem to believe that they know what is best for students and will, therefore, design spaces according to what they want to happen in their libraries, leaving

no room for production of space as argued by Lefebvre (1991). Lefebvre's theory holds that cultures produce spaces, meaning that the activities, needs and preferences of students should determine how spaces are designed. Since Choy and Goh (2016) warn that user needs and preferences have been in constant flux and in agreement with the argument by Lefebvre (1991) that spaces are continuously produced, created or recreated, learning spaces should be allowed to evolve to fit the needs of today and even the future. No wonder, various researchers (Chan & Spodick, 2014; Clugston, 2013; Bailin, 2011) advocate for spaces that are flexible, configurable and adaptable. Academic library space planners in Kenya need to acknowledge the changed role of libraries and allow students, who are their main clients, along with their needs and preferences, to be the major determinants of the shape and form of learning spaces.

5.20 Modern and Learner-Focused Spaces

Across the case libraries, there was expressed desire for both low-end and high-end technology; variety in space and furniture types; recreational and social spaces with access to food and drink; as well as increased ambience and comfort in terms of lighting, air circulation, color, wall art, music, nature and views of the outside. Both students and librarians wish for comfortable and appealing spaces with a variety of provisions to cater for the many, diverse and changing needs of students. Apparently, these desires are not unusual, they align with the hierarchy of space attributes by Cunningham and Tabur (2012), what Oliveira (2016) describes as student space preferences at the James White Library and features of 21st century library as presented by several works (Zhu, 2021; Spencer & Watstein, 2017; Fallin, 2016; Holmgren & Spencer, 2014; Chan & Spodick, 2014; McDonald, 2006).

What is different is that such spaces have mainly been realized in the global north. Examples of such spaces are lacking in Africa save for South Africa where Chisita and Chizoma (2021) report that several space repurposing projects have been accomplished. This list of desires is a demonstration that students and librarians are aware of what makes an academic library 21st century learning compliant. There are definitely reasons, including the ones discussed in Section 5.17 above, impeding the deployment of learning spaces that fit within these desires. It is encouraging that there are obvious attempts to modernize Kenyan academic libraries; two of the case libraries are examples of modern library buildings in the country though they are yet to model their space services and provisions into what can be described as 21st century learning spaces. A number of needs are catered for but a larger number of student needs and preferences remain unmet. It is possible that a mere change in space use philosophy and a deliberate shift towards student and learning-centered space arrangements away from collection-centeredness can bring great change to how students are supported in their learning within the library spaces. A significant number of these desires can be met within the cited low budgets and in-house, with minimal approvals. Assumably, little impactful achievements can lead to bigger projects that can turn the academic library in Kenya into a popular and active student-focused center for learning, research and innovation.

5.21 Chapter Summary

Academic libraries across the world are expected to provide collections, services and spaces that enable and foster student learning and research activities. The findings discussed indicate that Kenyan academic libraries provide spaces that are basic and largely traditional with services organized around collections. Student behaviors and

preferences as well as desires, of both students and librarians, point to the need to rethink library space designs, their provisions and affordances. A shift towards 21st century learning spaces presents academic libraries an opportunity to support the entire continuum of student learning needs and preferences; contribute directly to the overarching university mission, which is student success; and by so doing remain relevant in the current and evolving higher education and information landscape.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter provides a summary of the major findings of this study, the conclusion as well as recommendations proffered. The value of 21st century learning spaces to academic libraries in Kenya is discussed along with recommendations including a proposed framework for the (re)designing of library learning spaces. Suggestions of areas for further research are also presented in this chapter.

6.2 Summary of Findings

The aim of this study was to assess the extent to which academic library spaces in Kenya are aligned towards 21st century learning and propose a framework for their redesigning. The specific objectives were to: assess the status of physical learning spaces in selected academic libraries in Kenya; determine students' library learning space behaviors and preferences; examine the learning support services provided in library learning spaces; and develop a framework for the designing or re-designing of academic library learning spaces for the 21st century. The achievement of these research objectives was guided by the following research questions: i) What types of space and space features are found in academic libraries in Kenya? ii) Which spaces in the academic library are preferred and why? iii) What activities are students engaged in while in these spaces? iv) Are there services tailored to support learning in the learning spaces? v) What considerations are necessary when planning modern learning spaces in academic libraries? vi) What are the characteristics of an ideal library learning space?

Henri Lefebvre's Production of Space provided a theoretical lens for the study. An interpretivist stance within a qualitative approach was used to underpin the research problem. A multiple-case design was applied to gain a variety of insights, a deep understanding of the research problem and to ensure generalizability of the findings. Both interview and direct observation were used as data collection techniques since the researcher was interested in in-depth information. Four academic libraries were studied: University of Nairobi, Catholic University of East Africa, Egerton University and United States International University, Africa. Semi-structured interview guides were used to obtain data from librarians and student library users in these libraries. An observation checklist guided the observation of library spaces.

6.2.1 Space and Space Features in Academic Libraries in Kenya

An assessment of the status of library spaces with regard to learning was conducted. The findings indicated that academic libraries in Kenya majorly provide spaces for quiet study. These spaces take the form of open space, study carrels which are fairly private as well as computer labs. Spaces that enable collaborative learning, team activities, conversation, interactive or social learning, active and hands-on learning are generally not provided except for one case where discussion, presentation and innovation spaces were present. There is a tendency to provide postgraduate-only spaces that are relaxed in terms of rules, and supportive of the needs and expectations of that group of students.

The quiet and individual study policy is applied across board with rules regulating space use behavior clearly spelt out on signage, posters and enforced by librarians with the assistance of security guards. This means that there are efforts to ensure that the spaces

remain quiet and that they are used only for the intended purpose as perceived by space planners and librarians. This makes them highly dominated or controlled spaces with little or no room for alternative use or evolution.

Library spaces were found to have varying levels of comfort and ambience. Fairly new library buildings are spacious, clean with a good supply of washrooms, wide windows and atriums that allow natural light, circulation of fresh air and a view of the outside. Older library buildings suffer the challenge of being small, therefore, crowded; reliant on artificial lighting and a small number of washrooms that is not easy to keep clean. Across the libraries, students and librarians were dissatisfied with technological infrastructure. The Internet connectivity is either weak and/or unstable, power outlets are too few and the publicly provided computers were also few, old, not serviced and without current hardware and software.

The spaces are typically organized around collections across all the libraries visited and bear such labels as short loan, archives, reference, Africana, and e-resources that indicate the type of collection as opposed to the type of learning space. The library space is largely used to house print collections although computer technology is changing this. Electronic catalogues were in use across the libraries, self-service technology was also in use, though not in all the libraries studied. Electronic resources, especially periodicals, have been embraced and are replacing print collections which are being moved to basements or to compact storage. Budget allocations for e-books and e-journals are on the increase and bear the promise of freeing up space to create new or additional learning spaces.

6.2.2 Student Space Behaviors and Preferences

This study found out that students consider the library conducive for their learning as it is quiet and without distractions. In the library, students undertake quiet individual study in the open study area or in the study carrels; they work in groups and hold discussions, although this is not allowed; they study alone but, in a group, or where they can see others studying as it is motivating; they consult print books at the study tables; they access electronic and online information materials using their laptops, smart phones or desktops provided by the library. This is done at different times of the semester to complete individual and group assignments, to prepare class presentations and to revise class work in preparation for tests and examinations. While in the library, students also engage in non-academic activities like recreational social media use, talking or texting on phone, face to face conversations or chatting, listening to music, watching short video clips and movies, watching people, and sleeping.

Regarding space preferences, the study revealed that students place a high premium on areas within the library where a strong and stable Internet connection is possible and where they can charge their devices as they work. Computer labs were in active use and students waited in turn to use the computers owing to their small number. Other space features like thermal comfort, natural light, window views and privacy pull students to certain spots in the library buildings. Furniture preferences did not determine choice of a learning spot since the libraries tended to provide furniture that is uniform throughout the building. Students, however, indicated that they desire more comfortable chairs. Apart from the library, students also undertake academic work in their homes, halls of residence, student centers, laboratories, classrooms that are not in use, cafeterias and in

the campus open spaces. These alternative informal learning spaces are chosen for their convenient location, fewer or no rules, and since they allow conversation, noise, food and drink for students working individually or in groups. The area around the library is preferred since students are able to connect to the Internet provided by the library.

6.2.3 Learning Support Services

The study explored the services provided within the library space in support of learning. It was revealed that academic libraries in Kenya provide services that are largely traditional. While librarians acknowledge the need to take up new roles in support of student learning, their services revolve around collection access and library instruction. There was an expressed desire that librarians should be equipped with technology and Web skills, interaction and communication skills as well as abilities to be adaptable, open-minded, creative thinkers, proactive and empathetic, to enable them to support students in their learning.

It is expected that 21st learning spaces have expert help provided by bringing together services that are spread throughout the university. Across the libraries, there were close working relationships with ICT departments but there were no formal partnerships or efforts to bring ICT services and other student services into the library space. Librarians simply refer students to offices outside the library meaning that the libraries are yet to become one-stop facilities. Collaborating with other campus units would ensure that a wider range of student learning needs and expectations are met within the library.

6.2.4 Considerations when Planning Library Learning Spaces

To design relevant and usable learning spaces in academic libraries in Kenya, findings from this study indicate that space planners, librarians and other stakeholders will need to cater for variety in space types and space provisions, embed technology, ensure ready access to food and drink, consider the range of student needs and expectations, factor in student and staff numbers so that a sufficient number of facilities is provided, take care of ambience and comfort to ensure that the space can be used for long hours and repeatedly. It was noted that students are usually not involved in the design of library space and there was emphasis that student involvement would lead to the creation of spaces that are relevant and efficient.

6.2.5 Characteristics of 21st Century Library Spaces

The study established that students in Kenyan academic libraries desire a modern library with a variety of spaces that are technology-rich, comfortable and ambient in terms of furniture, visual comfort, thermal comfort, aesthetics, and cleanliness to support their learning needs as they change through the day, the week and the semester. They expect to learn in a relaxed environment with space use philosophies and rules that are supportive as opposed to prohibitive. Librarians acknowledge the changing role of the library and agree that they need to repurpose the spaces to provide for a wider spectrum of student learning needs and expectations. They cited low budget allocations, low buy-in by decision makers, lengthy approval processes, lack of space in the current buildings and the initial designs of the existing library buildings, as the factors hindering the achievement of 21st century learning spaces.

6.3 Conclusion

In view of the findings of this study, it can be concluded that academic libraries in Kenya provide spaces that are basic and partly supportive of student learning needs. They are set within the traditional storehouse view of libraries where services revolve around the collections as opposed to the users. Spaces in these libraries are yet to be designed to suit the support needed for learning in the 21st century although a slow, disparate but sure reframing is ongoing as evidenced by some attributes of 21st century learning spaces found in the libraries surveyed.

It is notable that the libraries continue to provide space services that fit the description of ‘one size fits all’ given the uniformity witnessed in space use philosophies, rules and regulations, and space types along with their affordances. Students using these libraries have little room for choice and have to fit within what is available despite their diverse needs, preferences, desires and expectations. Equally, librarians are yet to shift into new and innovative roles for the century. They continue to provide services that are fairly traditional with no integration of services located outside the library as is expected of a true learning hub.

Student learning needs and preferences as established by this study demonstrate that Kenyan academic library spaces have outlived their originally intended purpose and as such need to be re-appropriated lest they become irrelevant and fall vacant. It is, however, encouraging that both students and librarians recognize the need to repurpose these spaces to create learning spaces that are student-focused, technology-enriched and supportive of changing pedagogies. Unfortunately, a number of factors hinder the

development and realization of modern learning spaces in the libraries and key among them is inadequate funding and low buy-in from decision makers. The amount of space and designs of the existing buildings are limiting to even what could be achieved with minimal budgets. Evidently, more attention needs to be paid to how library spaces augment and bolster student experience. A holistic approach to their designing taking into account current learning, teaching and research needs and preferences would enable the creation of an efficient library.

6.4 Recommendations

This section makes recommendations of the study for the practice of librarianship, implications for theory as well as suggestions for further research. A proposed framework for (re)designing academic library learning spaces is presented as part of the recommendations. At the end of the proposal, the researcher describes the likely benefits of implementing 21st century learning spaces in the Kenyan academic library.

6.4.1 Recommendations for Practice

1. *Change in collection development and management* - Libraries are at a crossroad; they have embraced electronic resources and are moving redundant collections to the sides and freeing up space. This study recommends that instead of waiting for collections to become redundant upon acquisition of electronic alternatives, libraries should be deliberate about creating learning spaces by managing collections differently. This would mean, first, accepting that their worth is not necessarily expressed by the number of volumes and then conduct a proper analysis of physical collections with regard to their use and value to student

learning. Without fear of being regarded as ‘empty’, decisions should then be made about the storage of inactive and redundant collections. The positioning of active collections within the learning spaces should also be reconsidered. At the same time, investment in print collections should be rethought and collection development policies revised to reflect the desired change in the ratio of electronic to print acquisitions.

2. *A good understanding of student needs and expectations* - Existing and freed-up library space should be allowed to evolve according to student activities. While it may be easy to copy what has been achieved by other libraries, especially in the global north, or to simply add tables and chairs, there is a risk of having spaces that are not in tandem with the unique needs of an institution. Librarians should move beyond the usual satisfaction surveys and spend time observing and talking to students, users and non-users, using a variety of mechanisms, to understand what they really want. Librarians should be willing to let go of some of the long-held practices such as the view of libraries as entirely quiet spaces and allow a real evolution to take place. The unique needs, activities and circumstances of their campuses should determine how the library spaces are shaped to support learning.
3. *Re-examining the rules* - Libraries need to revisit library rules and regulations for an in-depth examination of how they enable or constrain the use of library learning spaces. Some of the rules in use in the libraries have been handed down from past generations. They were developed at a time when the concept of libraries, students, learning and information were very different from what is

currently going on in higher education and in the information world. As the libraries evolve, so should the rules. Relaxing or updating the rules may be a good first step towards the creation of spaces that are supportive of student learning needs and expectations.

4. *Redeveloping services* - Services should always be in tandem with current needs. As the academic library shifts towards becoming a learning center, services must be rethought. This does not mean doing away with what libraries have always done, some services like user training should continue, some like research assistance should be modified or upgraded and new ones like research data management should be born especially through partnerships with other campus departments. It is important that libraries formalize existing working relationships and seek new linkages where gaps exist. In the beginning it may not be possible to bring them physically to the library space but that should be the ultimate goal since students are best supported when services are collocated. Leveraging on established best practices for collaboration will ensure the success of these liaisons.
5. *Involving users* – This is a key step in creating spaces that are usable. The findings of this study indicate minimal or no student involvement in the (re)design projects. Librarians seem to assume that they know what is best for their libraries but since they are being created for students, student views become very important. Apart from studying students to understand their needs and preferences, the people charged with the responsibility to plan and design library space should make deliberate efforts to make students part of the process. Their

views can be garnered through surveys, interviews, participation in design committees and invitations to submit their own designs, however basic, to choose from a number of alternatives or give feedback once the designs have been implemented. It is important that design teams understand that student opinions are not necessarily inferior to those of experts. Instead, they are practical emanating from space use experiences and likely to yield efficient learning spaces.

6. *(Re)designing on a budget* - Space (re)building projects are known to be demanding in terms of time, expertise and funds. Acknowledging the financial struggles universities may be experiencing that make them not consider improvements to an existing library building a priority, this study recommends that redesigning commences on a minimal or zero budget. Libraries can start small and using existing materials and expertise, move slowly but ever closer to 21st century learning spaces. For example, redundant print can be used as book walls to create zones; furniture rearrangements can turn around a dull corner; moving stacks away from the windows can bring in natural light, increase air circulation and afford students a window view; power extension cables can increase the number of power points; open source software and internal technical expertise can revamp library provided computers; for a building with more than one level, one of the floors can be designated as a group work space and monitored to see how this affects learners on other floors before full implementation. Small changes made consistently can achieve a lot. What will be

needed is a clear direction and commitment to re-create the spaces and build up their affordances.

7. *A framework for (re)designing* – Whether repurposing an existing building or building afresh, some guidelines would help to ensure that all factors are considered. This study proposes a ‘Framework for (Re)designing Academic Library Spaces for 21st Century Learning’. This proposed framework has both a schematic diagram and an explanation that can be used to guide the creation of 21st century library learning spaces. The researcher provides ‘key determinants’ as evidenced by this study, reviewed literature and researcher experience along with ‘essential features’ that must be considered by a design team and ‘foundational factors’ that need to be taken care of so as to position the library for the achievement of 21st century learning spaces. This study observes that prevailing conditions in the libraries may not allow an immediate or full-scale re-establishment of space, it points out areas that emerged as critical and advises that they are regarded as priority areas. Aspects of ‘essential features’ are broadly divided into ‘basic’ and ‘advanced’ to signify what needs immediate attention or a starting point and what can be brought in later, as resources become available, for enhanced support. It is important to note that libraries should be guided by their unique needs and circumstances. They should build on what has been achieved and not forget to evaluate and adjust accordingly since change is continuous.

Framework for (Re)designing Academic Library Spaces for 21st Century Learning

This framework describes eight key features that need to be considered when designing 21st century learning spaces in libraries. It provides examples of both basic and advanced forms of these features since their achievement can be gradual and incremental. To position the libraries to support the achievement of these spaces, the framework discusses seven foundational factors.

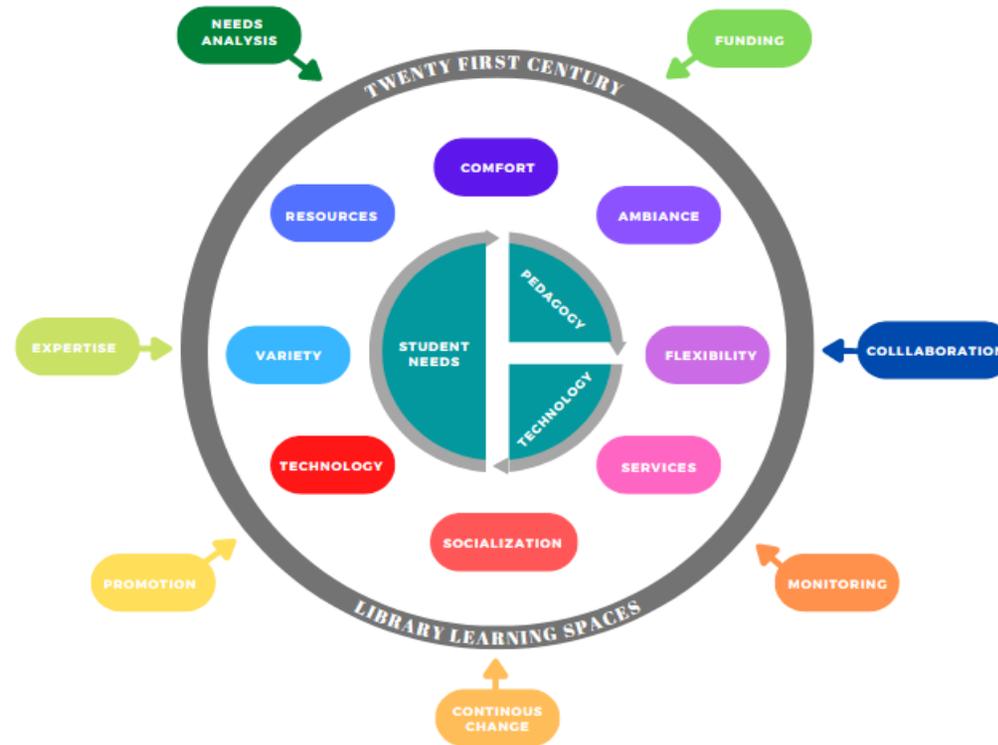


Figure 6.1: A Framework for (Re) designing Academic Library Learning Space for 21st Century Learning

Essential Features

1. Variety –To enable real choice

Justification: Students are inherently different; their needs are equally diverse and on constant change. The types of spaces offered ought to reflect current needs, preferences and learning modes of the diverse library community.

Major components:

To cater for variety in the learning spaces libraries should consider including spaces that support individual work, group work or collaborative activities. There can also be spaces that enhance privacy or community and these can be described as private, semi-private or public produced through open or enclosed designs. Variety in the spaces can also be achieved through zones with different levels of noise; spaces can be designated as silent, quiet, noisy or loud. Spaces can be designed to carry different messages. Such affordances as furniture styles, color and food or no food can be used to convey messages for formal, relaxed or social use. Variety can also take the form of fixed designs which do not allow alternative uses and mobile designs which allow change and therefore multiple uses.

Basic provisions in the libraries that cater for variety would include: carrels for individuals and groups; open study areas with different levels of noise; group study spaces; book-surrounded study spaces; instruction rooms; and different furniture types for varying activities and preferences.

Advanced pursuits to enhance variety in the learning spaces would include the provision of: cafes; meeting rooms; conference rooms; presentation spaces; lounges; TV rooms; exhibition space; galleries; classrooms; and innovation spaces.

2. Technology – For a seamless experience

Justification: Teaching and learning is increasingly being defined by technology as a facilitator and an enabler. Net Gen students are tech savvy and heavy technology users. Technology-rich spaces would go a long way in helping such learners to achieve their learning and social goals.

Major components

Various forms of technology can be considered by academic libraries in an effort to be 21st century compliant. Technology can be wired or wireless to support various uses. Libraries can start with low-tech facilities and progress to high-tech. Technology within the learning spaces can also be designed to support personal or public use, it can be shared or individual. Libraries can

choose between fixed forms of technology like desktops and mobile forms like laptops or a mix, depending on their circumstances.

Basic technology within library learning spaces would include: general use desktops; extensive power outlets; wall-to-wall Wi-Fi, security cameras, disability support tech, printers and scanners; video and audio rooms.

Advanced forms of technology would include: smartboards; display screens; makerspaces/innovation hubs; 3D printing; laptops and tablets for loan; and computers with specialized applications

3. Flexibility –For an all-time design

Justification: A highly flexible space has the ability to support many and varied activities. It can also morph as campus needs shift through the years. It is future proofed.

Major components

Flexibility means allowing for multiple uses and changed function with minimal or no costs. To achieve this, libraries should consider including in their designs partitions that are collapsible or moveable, furniture that is re-arrangeable and re-configurable to allow personalization and customization. Space designs that are open tend to be more flexible since they can be expanded or collapsed in support of different uses.

Basic provisions in support of flexibility in the learning spaces would include: easy to move chairs, tables and shelves; mobile partitions to enclose or open up; non-permanent rooms; and mobile equipment.

Advanced forms of flexibility would include: tables, chairs and whiteboards on wheels; table shapes that can be brought together for group use and set aside for individual use; collapsible walls; adjustable or zoned lighting; and privacy screens.

4. Socialization –To re-energize and refresh

Justification: Learning is increasingly social. Conversation is both a foundation and component of learning. Many times, students are not able to draw a line between social and academic activities.

Major components:

To encourage and cater for socialization within the learning spaces, academic libraries should work towards creating spaces that are inspiring and stimulating. The spaces should enable interaction among students and even between staff and students.

To enhance sociability, the spaces should be designed in a manner that allows relaxation, they should be adaptable given the variety of need and diversity among users. They should enable mixed use and of course include food and drink as these are major components of socializing.

Basic features that would enhance socialization include: allowing the use of phones, flexible food and drink policies; lounge-style seating; whiteboards; vending machines as well as newspapers and magazines.

Advanced ways to support socialization would be through: music; televisions; café; napping/sleeping facilities; exhibition; galleries; and gaming locations.

5. Services – For learning how to learn

Justification: Ready and integrated support ensures that there is learning in the spaces. Students likely stay longer as they do not have to seek help elsewhere. Integrated services would bring librarians and other campus officers on board as partners in the learning process.

Major components:

Services define 21st century learning spaces. This would mean that traditional library services are made richer by bringing in non-library and innovative services. Technology support would have to be part of the services provided since the spaces are likely technology infused and students are technology dependent. Service-rich learning spaces would be characterized a lot of collaboration among service providers and integration across student support departments.

Basic features of these services would include: enhanced access; instruction; technology troubleshooting; research help; disability support; and writing support.

Advanced levels of service would cover: publishing support; career guidance; counselling; language support; research data management; makerspaces; media labs; and hackathons.

6. Resources – To form a basis for their conversations

Justification: The traditional repository role of the library does not disappear in the digital age. Instead, it is enhanced and repositioned.

Major components:

Resources are at the center of what students would expect to find in libraries. Academic libraries should, therefore, endeavor to include multiple formats of information resources, multimedia as well as learning tools in the form of hardware and software. Resources can be located onsite, offsite or online. They can be presented in a manner that makes them either central or peripheral to what happens in the learning space. They can be shared among institutions or institution owned, they can be subscribed or freely available. Access can be single user, multi-user or open.

Basic resources within the spaces would be: print books and journals; electronic books and journals; servers; digital repositories; catalogues; discovery tools; and open educational resources.

Advanced ways to provide resources in the spaces would include: shared repositories; less active print collections stored offsite or in compact storage to free student spaces; and unrestricted use of computers.

7. Comfort –To create a campus living room

Justification: Comfortable spaces are likely to motivate students to use the spaces and maintain usage into the future.

Major components:

Academic libraries should consider infusing various aspects of comfort to make spaces usable. It would be important to ensure that temperature, lighting, air quality, acoustics and furniture within the learning spaces meet student desires.

Basic considerations would be to include: natural light; noisy and quiet zones, varied seating; circulating/fresh air; basic amenities like clean washrooms, food and drink as well as stationery.

Advanced forms of comfort considerations include: adjustable or user-controlled task specific lighting; furniture variety in terms of fabric textures, surface types, cushioning, armrests, footrests and incline; variety of zones with different noise levels; wall to ceiling windows; and thermal regulation.

8. Ambience – To be welcoming and pleasant

Justification: An inviting space would foster a sense of belonging and ownership.

Major components:

Ambience can be achieved in the learning spaces by paying attention to the physical layout, the interior décor, the furnishings, the background atmosphere and the general look and feel. Care should be taken to make sure that the right message is sent to the users. Since variety is a major factor in the designing, different spaces are expected to carry different messages and enable different uses.

Basic ways to make spaces ambient include: having variety in color; displaying artwork; exhibition of quality works; bringing in potted plants; and keeping the spaces clean and fresh.

Advanced ways make sure that the ambience is good would be to: consider designs that are spacious; include an indoor garden; have soft furnishings like carpets and curtains; and infuse music.

Foundational Factors

1. Needs analysis

University librarians must take the lead in repositioning the library to be responsive to student needs and preferences and as well as the expectations of the 21st century. An elaborate needs analysis would ensure that spaces evolve with student learning needs, styles and preferences. The contribution or input of stakeholders can be sought through meetings, focus groups, surveys and space observations. This would help the libraries to direct efforts and resources to where they are needed and thus stay relevant.

2. Funding

Fundraising sits at the core of space re-design projects. While it is possible to make changes with minimal budgets, a turnaround from traditional libraries, would need a significant amount of money. Apart from institutional funding, libraries may need to explore other funding avenues. Efforts should be made to convince potential funders, through proposals and presentations, to invest in the transformation of the campus library. The value of the reimagined library will need to be demonstrated to gain buy-in.

3. Expertise

It is expected that roles of librarians and other service providers will shift to suit the shape and form of the 21st century library. New skills will likely be needed and investment in capacity building in terms of new positions, professional development, and

compensation, would aid the achievement of 21st century learning spaces. Equally, discussions with staff regarding their strengths and interests would help to connect them to the right trainings and position them appropriately in the re-invented library.

4. Collaboration

Successful planning, designing, implementation and management of the re-created or new library will require that library managers collaborate extensively with various university departments. Campus planners, administrators, teaching departments and student services are potential collaborators and partners. Conversations could be formal or informal, planned or unplanned, taking into consideration the mission and vision of the collaborating partners, identifying shared goals, developing mutually beneficial projects and advancing institutional priorities. Clearly defined roles and responsibilities will be necessary for success.

5. Promotion

The library's new direction and concept will have to be communicated, both internally and externally, through a variety of mediums. The communication can take formal and informal approaches, through word of mouth or employing the skills of a communication specialist. Both traditional channels and new media can be used to ensure that the reach is wide and that all segments of the library community are brought on board. It is important that stakeholders understand and appreciate the new spaces and services as they put them into use.

6. Monitoring

Learning spaces will need to be continuously re-looked at to be sure that learning is taking place there. Constant feedback from the users would help the managers to know what is working right, what is missing and what can be improved. This should inform small scale re-adjustments and future investments. The feedback mechanism can be simple and informal at first, bringing in concerns which can later be investigated before changes are considered.

7. Continuous change

Student needs and preferences, pedagogy and technology which necessitate the transformation of academic libraries into 21st century learning spaces are in constant flux. University librarians and other leaders will need to see continuous change as part of what is needed to keep the spaces refreshed and relevant. In built flexibility makes the spaces versatile and ensures that change can take place without distractions or costs. Taking the changing university timetable, strategy and landscape, into consideration, libraries will need to regularly reconfigure and rebrand.

6.4.2 Implications for Policy

These study findings can influence policy related to librarianship at regional and national levels as well as within individual institutions. Regionally, the findings on the status of library spaces and what students expect and desire with regard to library learning spaces can influence the re-conceptualization of academic libraries and the design of library buildings and learning spaces. At the national level, the findings on the value of print collections can inform policy on library collection management with regard to resource sharing and the development of cooperative storage. The study findings on learning support services can influence the redesign of library school curriculum. Within universities, the findings that point to the need for redesigning of library space and the nature of services needed in these spaces can be used to reconsider library budget allocations; to establish collaborations between the library and other units or departments that support student learning; in the revision of library staff roles and responsibilities; in the formulation of space use policies and regulations; and in the reconfiguration of library student support services.

6.4.3 Implications for Theory

The findings of this study regarding the nature of library spaces, student needs and preferences and the need to redesign library spaces operationalize the application of Henri Lefebvre's (1991) theory of production of space, initially applied to urban spaces, in the planning of learning spaces in higher education. The findings demonstrate that the library has outlived its original purpose given what is expected of it in the 21st century. Lefebvre's spatial triad (See section 2.2) can be used as a lens through which library learning spaces can be reimagined. Perceived space can refer to the material aspects of

space in terms of size and number of space provisions. The conceived space can be seen as how library space impacts learning in terms of its conceptualizations, functionality and the messages it carries. The lived space allows designers, planners and managers of library learning spaces to consider the needs, preferences, activities and expectations of the users. An appreciation of these needs and desires can allow the academic library to evolve or to be socially produced and reproduced in tandem with the requirements of the 21st century university. Within the proposed framework for (re)designing library spaces, a dialectical relationship, similar to that of the spatial triad, exists among the key determinants, the essential features and the foundational factors. The achievement of 21st learning spaces in libraries is not a linear movement of progress, the key elements are all important and none can be said to be dominant over the others. They are all interconnected. They all need to be pursued.

The study findings also contribute to Ranganathan's laws of library science. Specifically, the 5th law, 'the library is a growing organism' is brought to life by the findings of this study. Findings on the status of library spaces and student space preferences, desires and activities show that libraries need to change in tandem with the needs of the user community. Findings on the learning support within the spaces serve to demonstrate that library services, a major component of libraries, need to evolve with the changing time and the changing campus demography. The findings confirm that a library should never be regarded as static, that change should be continuous. The academic library is reminded to research itself and reposition itself within the changing environment and its users otherwise its growth ceases.

6.4.4 Suggestions for Further Research

Various issues were encountered in this study but owing to a number of limitations, they could not be dealt with elaborately. The researcher suggests the following as possible areas for in-depth research:

- i. *Accommodation for post-graduate students* – this study found that each of the four case libraries has a form of special arrangements for this group of students. An in-depth study of the learning behaviors, needs and preferences of post-graduate students in Kenya would help determine their learning space needs and inform the designing of appropriate spaces. This way post-graduate students will be accommodated and supported better within the libraries.
- ii. *Library use and academic achievement* - in as much as students in this study highly attributed their academic success to the library, research that specifically investigates the link between library use and academic achievement among students in Kenyan universities is recommended to help librarians understand the library's contribution to student learning and success, and to explore mechanisms for enhanced support. This would help libraries to demonstrate their value in their campus and give them locus to argue for better budget allocations that can accommodate key projects like space redesigning.
- iii. *Library use by university students* – this study focused on student library users, interviewed and observed students who were in the library at the time of the study. Views of students who do not use the library for their learning were not gathered. Since the library is expected to support the entire student population, it would be important to establish the percentage of university students that uses the

library along with their reasons for non-use so that academic libraries can work towards supporting a bigger fraction of students.

- iv. *Universal design* – when applied in libraries, universal design means designing library buildings and services in a manner that makes them usable by people with a broad range of abilities, disabilities and other characteristics. This minimizes the need for special accommodations and ensures that everyone feels welcome. This study noted that in the libraries surveyed there were concerns about the accommodation of PWDs. An in-depth study of libraries with regard to the principles of universal design would reveal gaps and cause libraries to work towards designing for a wider spectrum of people’s abilities, disabilities.
- v. *Transformation of other types of libraries in Kenya* – libraries have always been places of learning, academic or otherwise. Little is known about how other libraries - public, research, school, are changing their spaces to meet the learning needs of users in the 21st century. An elaborate study would establish the status of spaces in these libraries, reveal the unique needs of the users of these libraries and inform space changes and adjustments for increased relevance and usability.

6.5 Summary

Academic libraries in Kenya are yet to put in place what can be described as 21st century learning spaces. Students and librarians appreciate the need for such spaces. Apart from recommending a framework for the redesigning of library spaces, this study suggests that changes in how collections are managed, understanding and involving users, re-examination of rules and regulations as well as redevelopment of services could aid the achievement of 21st century learning spaces. These spaces have the potential to make the

university library an active and communal campus destination that is enriching, student friendly, and providing a one-stop experience. The findings of this study could influence policy on how libraries are designed, managed and what services are offered. Further research on post-graduate spaces, the link between library use and academic excellence, the extent of library use by students, universal design in libraries and space planning in other library typologies is suggested.

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APPENDICES

Appendix 1: Interview Guide for University Librarians

TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

Interview Guide for University Librarians

Introduction

My name is Azenath Ateka. I am a PhD candidate at Moi University, School of Information Sciences. I am currently carrying out a study on library learning spaces. You have been appointed as one of the key persons in the study and I kindly request your participation. I am assuring you that the findings of the study will be treated with utmost confidentiality and will be used for the intended purpose only.

The interview will take about 40 minutes to complete.

1. Biographical Information:

a) Name of university.....

b) Designation

c) Duration in the current post.....

d) Gender: Male [] Female []

e) Highest level of academic qualifications: Bachelor's [] Master's [] PhD []

Other (Specify).....

f) Age range in years: 20-30 [] 31-40 [] 41-50 [] Above 50 []

2. Status of Library Spaces

a) What space provisions are available in your library?

- b) What aspects of academic activity (research, group work, individual study and multi-media work) are supported in the spaces?
- c) How does technology and equipment complement the spaces to foster greater learning outcomes?
- d) What is the greatest challenge in this library in terms of space provision?
- e) How satisfied are you with the library space with regard to supporting student learning?

3. Student Behaviors and Preferences

- a) What is your opinion about how students use library spaces?
- b) In your opinion, are the needs of students and learning styles fully catered for by the spaces provided?
- c) What desirable student learning behaviors are not accommodated by the existing spaces?
- d) Would you say there are spaces that are more frequented than others? Why is that so?
- e) Are students involved in making decisions about space changes or improvements?

4. Learning Support Services

- a) How do you support student learning in the library? How has this changed your role as a librarian?
- b) What skills and competencies do you require to fully support student learning?
- c) What challenges do you face in (b) above?
- d) Which other campus units or departments do you work with within the spaces to support learning?

5. (Re) design Plans/Projects

- a) What changes have occurred in the space provisions/ design/arrangement in the last 5 years? Why were they necessary? What process was involved? What challenges or constraints were experienced?

- b) How would you go about creating a welcoming space that promotes student learning? Would you consider partnering with other campus units? Which ones and why?
- c) What challenges do you face in your attempts to create a more learning-centered space?
- d) Does the library have plans to change/redesign the existing spaces? In your current strategic plan is there a plan for improving the spaces?
- e) How do users fit into the planning and designing of library space? Who are the other stakeholders?

Thank you very much for your time and sharing

Appendix 2: Interview Guide for User Services Librarians

TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

Interview Guide for User Services Librarians

Introduction:

My name is Azenath Ateka. I am a PhD candidate at Moi University, School of Information Sciences. I am currently carrying out a study on library learning spaces. You have been appointed as one of the key persons in the study and I kindly request your participation. I am assuring you that the findings of the study will be treated with utmost confidentiality and will be used for the intended purpose only.

The interview will take about 40 minutes to complete.

1. Biographical Information:

- a) Name of university.....
- b) Designation.....
- c)Duration in the curren tpost.....
- d) Gender: Male [] Female []
- e) Highest level of academic qualifications: Bachelor's [] Master's []PhD []
Other (specify).....
- f) Age range in years: 20-30 [] 31-40[] 41-50 [] Above 50 []

2. Status of Library Spaces

- a) What space provisions do you consider key in your library?
- b) What aspects of academic activity (research, group work, individual study and multi-media work) are supported by the spaces?

- c) What is the greatest challenge you face in managing the spaces?
- d) What complaints do you receive about the library space provisions?
- e) How satisfied are you with the library space with regard to supporting student learning?

3. Student Behaviors and Preferences

- a) What is your opinion about how students use library spaces?
- b) Which student learning needs and desires are not catered for by the spaces provided?
- c) Do you have rules governing behavior in the spaces? Which rule is most violated?
- d) Are there student space use behaviors you would like to discourage?
- e) Are there specific areas within the spaces that students prefer to work from? Why is that so?
- f) Do you receive compliments, complaints or suggestions about the spaces? Which ones are the most outstanding?
- g) Have you had to make space adjustments to accommodate student behavior or wishes? What else inspires the changes you make, if any?
- h) Do you consider print collections central to student learning? Are they actively used?

4. Learning Support Services

- a) How do librarians support student learning in the library? Do students desire and appreciate the support offered to them? Which kind of support has the highest demand?
- b) What skills and competencies have you had to acquire so as to better support student learning?
- c) Are you able to support all the learning and research needs as expressed by students? What is lacking?
- d) Which other campus units do you work with within the spaces to support learning?

5. (Re)design Plans/Projects

- a) What major changes have occurred in the space provisions/design/arrangement in the last 5 years? Why were they necessary? What process was involved? What challenges or constraints were experienced?
- b) What would you do to make the spaces more appealing to students? What modern features, equipment and facilities would you like added to the spaces to support the variety of learning needs?
- c) How do students fit into the planning and designing of library space? Who are the other stakeholders?

Thank you very much for your time and sharing

Appendix 3: Interview Guide for Student Library Users

TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

Interview Guide for Student Library Users

Introduction

My name is Azenath Ateka. I am a PhD candidate at Moi University, School of Information Sciences. I am currently carrying out a study on library learning spaces. You have been appointed as one of the key persons in the study. I kindly request your participation. I am assuring you that the findings of the study will be treated with utmost confidentiality and will be used for the intended purpose only.

The interview will take about 30 minutes to complete.

1. Biographical Information:

- a) Name of university.....
- b) Degree program.....
- c) How long have you been affiliated with this university.....
- d) Gender: Male [] Female []
- f) Age range in years: Below 20 [] 20-30 [] 31-40[] 41-50 [] Above 50 []

2: Status of Library Spaces

- a) Do you find the library spaces welcoming and conducive for your learning?
- b) Where else on campus do you undertake academic activities? What in that space makes it appealing?
- c) Are there academic activities that you feel are not supported by the library space?

- d) How is your use of technology supported in the library space?
- e) Would you like to see more spaces for interaction and socialization added to the library? Why?
- f) What other facilities do you wish were available in the library space?

3: Student Behaviors and Preferences

- a) How often do you come to the library? Why?
- b) Describe a typical library experience – What time of day do you come in? Where do you go? What do you do when in the library? How long do you stay?
- c) Which space do you find most useful for your learning and why?
- d) What non-academic activities do you use the library for?
- e) To what extent is your use of the library building directly attributable to your academic work?

4. Learning Support Services

- a) Do you get support from the librarians when in the library? Of what kind?
- b) How else would you like to be supported to be more successful in your learning?
- c) Do you consider the librarians skilled and knowledgeable?
- d) Apart from lecturers and librarians, are there any other departments on campus that support your academic work?

5. (Re) design Plans/Projects

- d) In your opinion, what factors should be considered when designing a library learning space?
- e) What features, facilities, equipment and technology would make a library space ideal for your learning?

Appendix 4: Behavior Observation Checklist

TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

BEHAVIOR OBSERVATION CHECKLIST

Date..... Site.....

Feature	Observed	Not Observed	Remarks
Seating			
In groups			
Individually			
Sitting in a group but working independently (Alone together)			
Sitting on Hard seating			
Sitting on Soft seating			
Seated on the floor			
Other			
Academic Activities			
Reading			
Writing/taking notes			
Group Discussion/Work			
Computer use			
Making presentation/projecting			
Printing/scanning			
Other			
Non-Academic Activities			
Sleeping			
Phone use - texting, talking			
Listening to music			
Drinking/eating			

Gaming			
Chatting/socializing			
Watching TV/News			
Other			
Services and Resources Use			
Seeking help at reference desk			
Consulting with librarians			
Using OPACs			
Consulting print resources/library books			
Using library provided computers			
Using Audio Visual Booths			
Using other equipment within the space			
Other			
Non-Library facilities use			
Conference room meeting			
Snack Bars use			
In class			
Working at the Education Technology Center			
Working from the Writing Labs			
Visiting the Art Gallery			
Other			
General Observations			
Intensive use period			
Low use period			
Reserved spots			
Coming and going			
Other			

Notes:

Appendix 5: Space Observation Checklist

TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

SPACE OBSERVATION CHECKLIST

Date..... Site.....

Feature	Observed	Not Observed	Remarks
Technology			
Access to Computers			
Big screens for presentation/ Projectors			
WiFi			
Power outlets			
Printers/Scanners/Copiers			
Flexibility			
Chairs and tables			
Screens/white boards			
Big tables			
Projectors			
Acoustics/Dominant factors/Comfort and image/Ambience			
Natural light and aeration – window sizes, skylight			
Outside-in (view of the outside)			
Declaration of function			
Rules/Appropriate behavior			
Color variety, zoning			
Noisy/Quiet			
Textures and materials: Carpets, soft furnishings			
Display of artwork			
New/Renovated			
Old/Dilapidated			

Sociability			
Soft seating			
Conversation/Interaction allowed			
Eating areas/Snacks/Coffee			
Phone use			
People watching			
Other e.g., lounge areas			
Services and Resources			
Information Technology Help Desk			
Reference Desk			
Assistive Technology Support			
Computer and Equipment lending			
Audio-Visual production facilities			
Other			
Non-Library facilities			
Conference rooms			
Snack Bars/ Vending machines			
Classrooms			
Computer rooms			
Multimedia centers			
Education Technology Centers			
Writing Labs			
Art Galleries			
Other			
Zones			
Independent study; Carrels			
Quiet study			
Group study			
Learning/Information/Research Commons			
Noisy			
Food/Eating zone			
Rest/Relaxing zone/Lounge			
Other			

Notes:

Appendix 6: Declaration of Consent

TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

Participant Declaration of Consent

I..... (Full names of participant) hereby confirm that I have read and understood the nature of this research project, and I consent to participate in the research. I understand that my participation is voluntary and that I am free to withdraw from the project at any time, if I so wish.

SIGNATURE OF PARTICIPANT DATE

Sign.....Date.....

Student's Contacts:

Azenath Ateka

P.O. Box 2837-00200

Nairobi, Kenya

Telephone: 254 720 827 822

Email: ATEKAAZENATH@GMAIL.COM

Supervisor's Contacts: Dr. Emily Bosire

Moi University

Email: EMILYKWAMBOKA@GMAIL.COM

Dr. Elsebah Maseh

Moi University

Email: JMASEH@GMAIL.COM

Appendix 7: Informed Consent for Audio and Photographic Recording

TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

Declaration of Consent for Audio and Photographic Recording

Dear Participant,

AUDIO AND PHOTOGRAPHIC RECORDING

My name is Azenath Ateka. I am a PhD candidate at Moi University, School of Information Sciences. I am currently carrying out a study on library learning spaces. You have been selected as one of the key persons in the study. I kindly request your participation and I would like you to note that:

- The information you provide will be treated with utmost confidentiality and will not be attributed to you in person, but reported generally as a respondent opinion.
- Any information given by you, will be used for purposes of this research only, whose focus is academic with no financial benefits.
- Care will be taken to store data in a secure manner and to destroy it after 5 years.
- Your participation in the research is out of your free will. You will not be penalized for not participating or for discontinuing your participation.
- The interview may last about 30 minutes.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether the interview can be recorded by the following equipment:

	Willing	Not Willing
Audio Recording Device		
Photography Device		

Student's Contacts:

Azenath Ateka

P.O. Box 2837-00200

Nairobi, Kenya

Telephone: 254 720 827 822

Email: atekaazenath@gmail.com

Supervisor's Contacts:

Dr. Emily Bosire

Moi University

Email: emilykwamboka@gmail.com

Dr. Elsebah Maseh

Moi University

Email: jmaseh@gmail.com

Appendix 8: Debrief Form**TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA****Debrief Form**

Thank you for taking time to participate in this research study. The study aims to establish the status of library learning spaces in universities in Kenya and propose a framework for their redesigning.

Furthermore, the information may help to realign the spaces towards 21st century teaching and learning and turn them into places of choice on campus.

Once again thank you for your participation.

Sincerely,

Azenath Ateka

PhD student and researcher,

Moi University.

Appendix 10: IRB Clearance Letter



REF: USIU-A/IRB/302-2021

17th August, 2021

TO: AZENATH N. ATEKA

Dear Sir/madam

RE: TOWARDS 21ST CENTURY LEARNING SPACES: THE CASE OF SELECTED ACADEMIC LIBRARIES IN KENYA

This is to inform you that **IRB** has reviewed and approved your above research proposal. Your application approval number is **USIU-A/IRB/302-2021**. The approval period is **16th August 2021 – 16th August 2022**

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by **IRB**.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **IRB** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to **IRB** within 72 hours
- v. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vi. Submission of an executive summary report within 90 days upon completion of the study to **IRB**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely

A circular stamp containing a handwritten signature in blue ink. The signature appears to read "Juliana M. Namada".

Juliana M. Namada, Ph.D.
Institutional Review Board (IRB) Chair
 Email: irb@usiu.ac.ke

Appendix 11: Approval to Conduct Research at USIU-Africa.



AZENATH N. ATEKA

aateka@usiu.ac.ke

6th October, 2021

Dear Azenath,

REF: PERMISSION TO CONDUCT RESEARCH AT USIU-AFRICA

Following your request to conduct research at USIU-Africa on the topic **“Towards 21st Century Learning Spaces: The Case of Selected Academic Libraries in Kenya”** the university's Research Office has authorized you to collect data from the respondents in the Institution.

However, the university imposes the following conditions:

1. No personal information will be asked of the respondents.
2. You will share the preliminary report findings with us prior to completion.
3. You will provide a copy of the completed research to us.
4. Under no circumstances will the information obtained from USIU-Africa be re-used or disclosed for other purposes.

Your research period expires on 6th December 2021. Kindly contact the undersigned to confirm your acceptance to the condition stated above.

Sincerely,

A handwritten signature in black ink, appearing to read "A. Njuguna", is written over a faint circular official stamp.

Prof. Amos Njuguna,
 Dean- School of Graduate Studies, Research and Extension.
 Tel: 0730116442
 Email: amnjuguna@usiu.ac.ke

Appendix 12: Approval to Conduct Research at the Catholic University of East Africa



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

Office of the Deputy Vice Chancellor
ACADEMIC AFFAIRS & RESEARCH

Our Ref: DVC/AA&R/RG/esm/053/2021

6th October, 2021

Azenath N. Ateka
Moi University
Eldoret, Kenya.
REF: IS/PHD/LIS/02/17
Tel. No. 0720827822

Dear Azenath,

RE: Permission to Conduct Research at The Catholic University of Eastern Africa (CUEA)

Greetings in the Mighty Name of our Lord and Savior Jesus Christ!

I am glad to inform you that your request to conduct research on the topic: *"Towards 21st Century Learning Spaces: The Case of Selected Academic Libraries in Kenya."* has been granted. You are therefore authorized to collect data at The Catholic University of Eastern Africa library. You are expected to strictly observe the normal ethical cautions and discretions while conducting the research.

I wish you well with your study and I look forward to you sharing your findings with the Directorate of Research and Innovation of the The Catholic University of Eastern Africa.

Sincere regards

Mrs. Prof. Rachel K. Gesami, PhD, MBS
Deputy Vice Chancellor/Academic Affairs & Research

CC *Vice Chancellor*
Directorate of Research & Innovation
University Librarian



Appendix 13: Approval to Conduct Research at the University of Nairobi



UNIVERSITY OF NAIROBI
OFFICE OF ASSOCIATE VICE-CHANCELLOR
 (Research, Innovation and Enterprise)

P.O. Box 30197-00100
 Nairobi, Kenya
 Website: dvcrie@uonbi.ac.ke

Fax: +254-2-2317251
 Email: avcrie@uonbi.ac.ke

UON/RIE/3/5/VoLXX /

October 5, 2021

Ms. Azenath N. Ateka
 P.O Box 14634 – 00800
 Nairobi
 E-mail: atekaazenath@gmail.com

Dear Ms. Ateka,

PERMISSION TO COLLECT DATA

I refer to your request to conduct research at the University of Nairobi, for your project entitled: **“Towards 21st century learning spaces: The case of selected academic libraries in Kenya”**.

I write to inform you that your request has been approved.

You are however required to share the findings of your study with the University of Nairobi by depositing a copy of your findings with the Director Library & Information Services on completion of your study.

Yours sincerely,

PROF. M. JESANG HUTCHINSON
ASSOCIATE VICE-CHANCELLOR (AG.)
(RESEARCH, INNOVATION AND ENTERPRISE)
AND
PROFESSOR OF HORTICULTURE

Copy to: Vice Chancellor
 Deputy Vice-Chancellor (AA)
 Director, Library and Information Services

AAM/jks

Appendix 14: Approval to Conduct Research at Egerton University



**OFFICE OF THE REGISTRAR
(HUMAN CAPITAL & ADMINISTRATION)**

EU/APD/CR/2N/30

21st October, 2021

Azenath N. Ateka
P.O. Box 14634-00800
NAIROBI

Dear Ms Ateka,

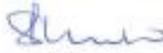
RE: APPROVAL TO CONDUCT RESEARCH AT EGERTON UNIVERSITY

Reference is made to your letter dated 4th October, 2021 on the subject above.

Permission is hereby granted for you to undertake research study titled **"Towards 21st century learning spaces: The case of selected academic libraries in Kenya"**.

Please note that the confidential information so obtained during the course of your studies should be treated with utmost confidentiality.

Yours sincerely,


Stellah J. Kereto
AG REGISTRAR (HUMAN CAPITAL & ADMINISTRATION)

SJK/jjk

