Data-Based Library Management: A Case of Botswana Secondary School Libraries

Lynn Jibril
Department of Library Services, University of Botswana, Gaborone, Botswana
E-mail: Lynn.jibril@mopipi.ub.bw

Abstract:

School Libraries are crucial to education system since they support teaching and learning. However, despite substantial investment in school libraries by the governments, there is a glaring absence of effective monitoring of policy implementation by the Ministry of Basic Education (MOBE) to ensure resourcing and utilization of school libraries in schools. This adversely affects school library service provision and programs. This paper is uses a systematic literature review method to advocate for a framework to guide school library service provision. It is imperative that there be a framework to guide Teacher Librarians in light of recent developments in the education system in Botswana as articulated in the Botswana Education & Training Sector Strategic Plan (ETSSP 2015-2020) Strategic Priority 1: where the government seeks to improve Quality and Relevance by providing schools with a library and multi-media facilities meeting national standards. It is envisioned that the proposed framework will be comprehensive enough to be followed by schools that do not have an effective library as a guide to enable them to set up a library that is ICT and data enabled library.

Keywords: School Library Framework, Evidence-Based School Library Management, Data Driven Library Management, Sustainable Development Goals.

1.0 Introduction

School Libraries are crucial to the education system since they support teaching and learning. According to Mahwasane (2016) the library is "the backbone of all educational institutions as they provide a wide range and type of information resources that empower educational institutions to generate extremely resourceful individuals". The government of Botswana fully supports and recognizes the importance of school libraries; for example, two education policies, Education for Kagisano, 1977 and the Revised Policy on Education (1994) highlighted the importance of school libraries in education of primary and secondary school students in Botswana.

In Botswana, school libraries date to as far back as independence and have evolved over time to ensure good quality education in schools as articulated in the Education and Training Strategic Sector Plan which outlines the government of Botswana's intentions of being a globally competitive, knowledge and information society. The current shift from teacher centred methods of teaching to learner centered methods also recognizes and emphasizes the importance of school libraries.

However, despite substantial investment in school libraries by the government of Botswana, there is a glaring absence of effective monitoring of policy implementation by the Ministry of Basic Education (MOBE) to ensure the resourcing and utilization of school libraries in schools. Furthermore, there is no department in the MOBE that is responsible for advisory, supervisory and support functions to ensure strict adherence by school libraries to the stated government policy. In addition, there is no data available for example (data on user population, usage statistics, library collection and use of library services and programs) generated by school libraries to inform decisions regarding the continuation or modification of school library structures and the services they provide. This is despite the existence of data analytics tools which offer libraries and librarian's new ways to collect and analyze data to provide library clients with personalized service in the era of accountability to justify their value and contributions. (Cheng,2016).

It is against this background that this paper examines the feasibility of coming up with a framework to guide data collection and utilization of data generated by school libraries users to inform decisions regarding school library service provision. It is envisioned that the proposed framework will be comprehensive enough to be followed by schools that do not have an effective library as a guide to enable them to set up a library that is ICT and data enabled library.

2.0 Methodology

The paper is informed by a systematic literature review method on the subject school library management and utilization of data and its impact school library service. Systematic literature review enable one to identify, evaluate and integrate the findings of all relevant, high-quality studies and are regarded as research on its own right. The advantage of systematic literature review is that it enables one to address much broader questions than single empirical studies (Baumeister & Leary, 1997; Bem, 1995) Papers published between 2010 and 2019 on school library management, the role of school libraries and data utilization in school library management were reviewed. The paper provides a summary of the findings and develops a framework based on these.

3.0 THE CONCEPT OF DATA DRIVEN LIBRARY MANAGEMENT

According to Showers (2012), Data, is at the heart of the systems and services that the library delivers from the management of electronic resources to the discovery of books and journals. Data driven library management is about providing evidence to support the decisions one makes either about the collection or the library programs and services. It is imperative that Libraries in their quest to repurpose themselves, re justify their existence, re look into their daily operations, reengineer how the services and programs are offered and recraft the solutions to such. Data driven library management is a way of transforming library services to ensure effective and relevant custom-made services that will attract and impact on the lives of the library users.

As Showers (2012) put it, Data management encourages a focus on data that underpins solutions generated as data collected from across the school can be aggregated in the school library to provide a basis for new library service and interventions tailored to meet needs of users. It is therefore imperative that as way of adopting new ways of serving the library user's needs libraries should as a matter of priority adopt the concept of data driven management system to be able to advocate effectively for the improvement of their services.

3.1 Data Tools in School Library Management

In today's world where school libraries serve the digital citizens it is important to make sure that the manner in which libraries operate complies with what digitization requires. Libraries should therefore utilize ICT in their operations. Amongst these are

3.1.1 Library Management System

Library Management System are defined as "a tool or a platform that performs all the functions of a library in an automated and organized fashion – from issuing or checking out of books to keeping a catalog of all books the library contains to levying fines for late returns of books." A library management system can be a standalone tool or platform or part of a school Enterprise Resource Planning (ERP) system or software in the form of integration or plugin. There are various library management systems that can be used to manage the library collection for example Libwin, Libqual, Koha, L4U, Millennium, and Sierra they vary greatly depending on the size of the collection. However, there are certain characteristics that libraries need to consider when making a decision of which one to use for their type of library

3.1.2 Advantages of Using Library Management Systems

Using library management systems will enable school libraries to
- Effectively dispense information service that appeal to the user,
- save on the time of the user when searching for information
- improve effective service.
- adept at taking on the many repetitive and predictable processes and tasks that are an endemic part of running a library
- provide information on what the library has
- enable users to search for library materials using such that is to say it should allow access to the library catalogue,
- allow the library personnel to be able to issue and renew library materials
- tracking the status of that material
- know data on the overdue status of the material and be able to generate fines for such.

A library management system has therefore become an essential in running and managing the library functions effectively. It also helps in countering the tradition of decision-making that relies on instincts, unverified assumptions, unfocused discussions, which are devoid of data and analysis (Lakos: 2007). The management system should further be able to provide data on the usage of the collection and generate a report on user patterns to enable the librarian to be able to report on such weekly, fortnightly or monthly basis.

In order for libraries in Botswana to be part of the global wind of change they ought to re look into ways in which they provide the library and information service and embrace a culture of assessment of the services they provide and integrate tools that will assist them collect data for evaluation and possible improvement of these services . As result having a

library management system that will not only collect and analyses the data for the library has not only become essential, but it has become crucial.

3.1.4 Benefits of Data Driven Library Management

In times of increasing information explosion, school libraries have become vital resources of information that assist learners to appropriately respond to their information needs. This is particularly true for today's learners whose learning experiences have been diversified by new technologies and the library; especially the secondary school library. It therefore goes without saying that for the library to be useful to its users it has to collect data that will inform its operations in terms of the services and programs it offers. Data enables the library to be smart and user-friendly by providing personalized and intelligent services. The collection of such data not only enables the school library to provide customized services to their users but also enables the library to remain relevant and appealing to the diverse needs of the users while having a positive impact on teaching and learning. Liu (2018) supports this and states that "The analytics of library data support tremendous digital library innovations, such as personalized recommendation services and library user behavior/habit analysis, which generate substantial value and insights for the librarian, user, and services. Values for the librarian are manifested in the changes and benefits provided by intelligent big data analytical techniques to librarians and digital management processes that enables library to provide competitive products and services with minimal costs. (p374)

In times of dwindling financial challenges it becomes more important than ever before for libraries to be able to account and justify their existence and the need for financial support from the funders. Consequently, it also becomes important for libraries to provide evidence in terms of detailed statistics and data on library collection usage, database usage , students assessment to demonstrate the level of activity and improved academic performance of the learners. Further libraries need data to continuously find more interesting ways of retaining their users and bringing on new users to make improvements in the education of all and to ensure quality education that will ultimately add value to the sustainable development of the livelihoods of the nations. It is against this backdrop that data for school libraries is important to inform decision making in the improvement of school library programs and services.

4.0 Status of School Libraries in Botswana

Altogether, there are two hundred and fifteen (215) secondary schools under the Ministry of Basic Education (MOBE) in Botswana both junior and senior. The MOBE has divided these into regions as follows: The Central region, West region, South central and the South regions. However, this research was limited to junior secondary schools in the Gaborone area which falls within the South-Central Region. The research was confined to Gaborone (capital city of Botswana) schools due to time and financial constraints.

In Botswana, School Libraries are run by teachers' librarians, these are teachers who teach a core subject area as well as manage the library. They may have a library qualification, or they may have none. All secondary schools have a library and the students and staff have access to library services either through the English language scheduled extensive reading class or a flexible library lesson. All the school libraries in Botswana have a library vote whose size is dependent on the student enrolment of the school. In support of this Baffour Auwah (2002) states that "It was the agreed that there must be regular funding to replace withdrawn items and to add new stock. In 1986, the sum of P8 (then about £3 Sterling) was allocated per pupil.

It was meant only for library books, although in some schools it was used for textbooks and other items. The allocation has since grown from P8 to P12 to P20, and in 1997 it became P30 (about £7.50). The allocation is paid into the school coffers in January each year and is based on the enrollment of a school '

Due to the lack of Professional qualification on the part of the teacher librarians, libraries in Botswana are not professionally run. They are opened only when the teacher librarian is free from teaching his or her core subject area, they are not part of the main school timetable and they do not necessarily support teaching and learning. This is evidenced by most of the collection in secondary school which is characterized by old donations from the Botswana National Library Service as well as other donors like the Botswana Books Project. It should be noted however that the role of the librarian in producing successful learners, responsible citizens and effective contributors in the society cannot be overemphasized .As William (2013) aptly puts it "the role of school librarians in the secondary sector cannot be underestimated. Their understanding of different learning styles and Collaboration with teaching colleagues enables them to act as a bridge between young people, teachers, information and the curriculum."

4.1 Importance of transforming school libraries in Botswana

There is no doubt that libraries are essential to good school outcomes and that there is no good education without good school libraries. Given the scenario above school libraries in Botswana have no choice but to change and embrace new developments in the area of information communication technology to offer learners the best learning experience like their counterparts elsewhere in the world. The MOBE advocates for a well-rounded learner who will be globally competitive. A lifelong learner who will be able to participate in the democracy of their country. This type of learner is one who has been exposed to a wide range of information sources, who has equal access to information to aid decision making. The school as a critical key player in the provision of such information has a crucial role to play in ensuring a globally competitive learner. It therefore goes without saying that there is urgent need for schools to transform from those that collect books to spaces that offer safe places that encourage exploration, creation, and collaboration between students, teachers, and a broader community. They bring together the best of the physical and digital to create learning hubs. The current Education and Training Sector Strategic Plan (ETSSP 2015-2020) calls for collective efforts as a nation to bring about a more diversified and knowledge-based economy. This subsequently translates to the provision of transformed services that will offer diversified ways of providing services that will not only impact on people's lives but will also ensure a knowledge society that will participate actively in the creation of knowledge to support an economy that is not only data driven but also based on knowledge and information. Against this background Botswana school libraries are challenged to transform the services they provide to embrace new and emerging technologies to be in a position to produce the 21st century learner who will be able to compete at par with their counterparts globally.

4.1.1 Global Sustainable Development Goals

With the advent of inclusivity and leave no one behind as well as the global sustainable development goals the need for improved student's achievement has even become greater. School libraries as the first contact point for enriched learning have become crucial players in ensuring equal access to information resources for all.

According to the 2015 *IFLA School Libraries Guidelines*, "the goal of all school libraries is to develop information literate students who are responsible and ethical participants in society"

The guidelines also acknowledge the importance of evaluation; "Successful evaluation leads to renewal of programs and services, as well as development of new programs and services" (p. 7). To that end, school librarians should systematically collect and analyze data in order to make informed decisions. It therefore is imperative for school libraries to continuously seek on improved ways of providing a service that will go a long way in cultivating a culture of reading and seeking for information that will encourage lifelong learning. Data decision Making as a concept that underpins accountability and improvement of services has come in handy to help school libraries monitor and evaluate the services and programs they provide. According to Datnow (2007) Supporters of data driven decision making practices argue that effective data use enables school system to learn more about their school, pinpoint success and challenges, identify areas of improvement. She further states that since the effectiveness of schools is being measured by performance indicators, it is not surprising that educators are now using data for improvement.

Research conducted by 'Alwin ,2002,Doyle,2003 Johson,1999,2000, Lafee,2002 McIntire ,2002) suggest that data driven decision making has the potential to increase students' performance. Datnow (2007) asserts that when school level educators become knowledgeable about data use, they can more effectively review their existing capacities, identify weaknesses and better chart plans for improvement. Similarly in the school library set up when the librarian has students achievement data he/she can use the data to monitor students' performance for improvement, they can determine what type of programs can be put in place and resources could be acquired to further assist the students master the required skills either of studying , reading , communication or writing. (Supovitz & Taylor, 2003; Togneri, 2003) quoted in Datnow (2007) also are of the strong opinion that high-performing districts make decisions based on data, not on instinct.

4.1.2 Challenges

 It is important to note that schools libraries in Botswana have challenges which to a large extend hinder their growth and development. These challenges include the shortage of resources, the underutilization of the few that are in existence, the lack of support by the administrators and lack of competence on the part of teacher librarians to mention but a few. Baffour Auwah (2002) affirms this in her paper title state of the art report on school libraries when she says 'Staffing junior and senior secondary school libraries with qualified individuals is a major problem in Botswana. Many staff are still untrained, and many expatriate staff still leave and take their skills with them' The above mentioned situation is very hurtful to the education system of the country as untrained personal lacks the know-how of running school libraries and therefore are not also in a position to advocate for their improvement.

As mentioned earlier on in this paper the education system in Botswana does not incorporate the library in the overall school programme. This translates to the fact that there is no systematic use of the school library such that it can be linked with students test scores or the overall academic performance of the students. Global Literature for example Williams (2002), Baharuddin (2013) reveals that the role of the teacher librarian is crucial in the overall functioning of the school library and therefore the teacher librarian has to play a proactive role and collaborate with the classroom teacher to infuse library skills into teaching and

learning. Teacher librarians need to realize that school libraries are not only focused on collection development but rather are meant to equip both students and teachers with lifelong learning skills that will enable them to survive even in life after school. Ideally, there has to be some library programme in the school offering the teaching of library and information skills. Before students become independent users of information, they need to learn to choose resources to use, how to select and find information and how to make the best use of it. Such a program will help unleash such potential in the school learners. School libraries in Botswana do not have a library management system that could assist to collect data systematically and analyze it to guide future decisions regarding the continuation or modification of school library structures and the services they provide.

Due to the fact that school libraries are run and open at the discretion of the teacher in charge, they are mostly underutilized since they are closed most of the school time. Baffour Auwah (2002) affirms this when she says 'Training programs for teacher-librarianship began at the University of Botswana (UB) in 1988 and at Molepolole and Tonota Colleges of Education in 1990. The University of Botswana has to date trained about 127 teacher-librarians (Stoneham, 1996). The course involves a certificate in school 28 Margaret Baffour-Awuah School Libraries in Botswana librarianship program, and is spread over two years, running from May to August each year. It is offered to teachers with at least two years of work experience. On successful completion, they are required to put theory into practice by setting up a school library where none has existed or developing what is already in place.

However, all these teachers will have full teaching loads, some as many as 36 periods a week'. In addition to the already existing challenge of lack of skills and qualifications on the part of teacher librarian the quotation above also highlights yet another problem of high teaching loads. This is a worrisome situation specially taking into consideration the critical role the library plays in encouraging creativity and promoting critical thinking and communication skills. One wonders how this will be achieved in an era that not only calls for information literate learners but a time where technology demands continuous generation and creation of information and knowledge for sustainable development. Given the situation portrayed by Baffour Auwuah (2010) where she states that 'All the government secondary schools have computers, but most of them are not in the libraries. Basing on the background given, there is indeed need for school libraries in Botswana to transform and incorporate technology to improve on the library services and programs. There is also lack of support from the administrators since there is no value for the money the government inputs into the school library system. There are no professional development opportunities for teacher librarians, no continuous education for them in terms of workshops, Conferences and seminars.

5.0 Proposed School Library Framework Guide Data Collection and Utilizations Of Data Generated By School Libraries

As way of adopting new ways of serving the library user's needs libraries should as a matter of priority adopt the concept of data driven management system to be able to advocate effectively for the improvement of their services

5.1 Data Driven Library

5.1.1 System generates Information on

- daily operations

- issuing or checking out of books
- keeping a catalog of all books the library
- levying fines for late returns of books.
- manage the library collection
- data on the usage of the collection
- user patterns

5.1.2 Aggregated Data Can Be Used As

Evidence to support the decisions about

- collection development
- library programs
- services.

Reengineer the Services and Programs Offered

Recraft the Solutions

Library User Behavior/Habit Analysis, Which Generate Substantial Value and Insights for The Librarian, User, And Services

Basis for New Library Service and Interventions Tailored To Meet Needs Of Users
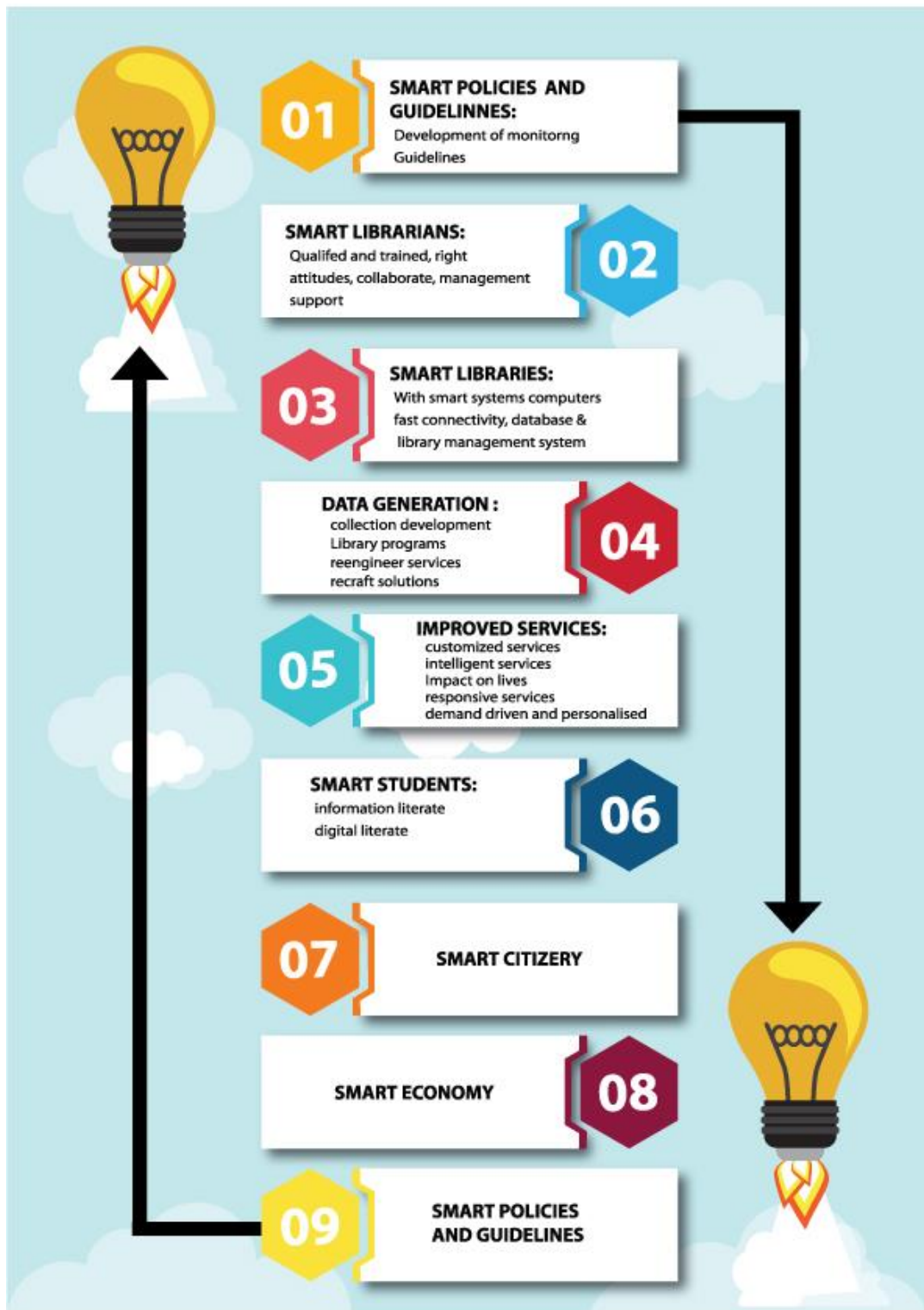
5.1.3 Benefits

- effective and relevant custom-made services
- increase customer base
- Impact on the lives of the library users.
- Effectively dispense information service that appeal to the user
- save on the time of the user when searching for information
- Improve effective service.
- adept at taking on the many repetitive and predictable processes and tasks that are an endemic part of running a library
- provide information on what the library has
- enable users to search for library materials using such that is to say it should allow access to the library catalogue,
- allow the library personnel to be able to issue and renew library materials
- tracking the status of that material
- know data on the overdue status of the material and be able to generate fines for such

5.1.4 Will Free the Librarian To

- Assist learners to appropriately respond to their information needs
- Teach user to use new technologies
- Thus, become smart and user-friendly by providing personalized and intelligent services.

- Provide customized services to their users
- Enables the library to remain relevant and appealing to the diverse needs of the users while having a positive impact on teaching and learning.
- As personalized recommendation services
- Librarian to initiate instructional, collaborative and promotional activities
- Collaboration with teaching colleagues, senior management, librarian colleagues and outside agencies, including central school's library services, to ensure the most appropriate services are delivered in support of learning
- **Data Driven Library Management Framework**

Conclusion

The educational system in Botswana provides the current policy framework for the utilization of school libraries to support the education of learners at secondary level. In order for secondary schools in Botswana to leap into the transitional phase of global developmental trajectory, there is need for a radical transformation of the library system to support this

move. This requires a careful identification of an appropriate framework that is easily adaptable for national usage and professionally qualified work force to operationalize the system with clear data pathway generation that will in turn provide the bases for improving services so that schools will be proud of their products and be confident that they are now ready to take their place in the fourth industrial revolution carrying the country along with them into the global competitive community.

References

Alwin, L. (2002). The will and the way of data use. School Administrator, 59(11), 11.

Baffour-Awuah. M (2002) School Libraries in Botswana: A State-of-the-Art Report, Botswana National Library Service, Educational Libraries Division, Botswana

Baharuddin, M. (2013) The role of the teacher librarian and information literacy: a case of four MARA Junior Science colleges in Kedah Malaysia

Baumeister, R. F., & Leary, M. R. (1997). Writing narrative literature reviews. Review of General Psychology, Vol 3, 311-320.

Botswana (1994) Revised National Policy on Education. Paper number 2 of 1994.Gaborone; Government printer

Chen,H (2016) Library assessment and data analytics in the big data era: practice and policies Published in: Proceedings Asist '15 proceedings of the 78th asis&t annual meeting information science with impact: research in and for the community. Article No 2

Datnow, A, Park, V, (2007) Achieving with Data How high-performing school systems use data to improve instruction for elementary students. Center on Educational Governance Rossier School of Education. Los Angeles

Doyle, D. P. (2003). Data-driven decision making: Is it the mantra of the month or does it have staying power? T.H.E. Journal, 30(10), 19-21.

Education for Kagisano: Report of the National commission on Education. Gaborone, April 1997

Farmer, L. (2016): Data Analytics to Improve School Libraries
International Association of School Librarianship. Selected Papers from the ... Annual Conference; Brantford.

International Federation of Library Associations and Institutions. School Libraries Section. (2015). *IFLA School Libraries Guidelines.* The Hague, Netherlands: International Federation of Library Associations and Institutions.

Lafee, S. (2002). Data-driven districts. School Administrator, 59(11), 6-7, 9-10, 12, 14-15.

Lakos, A 2007 Evidence-Based Library Management: The Leadership Challenge
Libraries and the Academy, Vol. 7, No. 4 (2007), pp. 431–450.

Mahwasane N, P (2016) The Roles of Libraries in Sustaining Quality Education in Secondary Schools: A Concept Paper. Journal of Social sciences Vol.51 2017 Issue 1-3

Marshall, B (2014) Data Driven Libraries; Computers in Libraries Vol.34 Issue No 7

McIntire, T. (2002). The administrator's guide to data-driven decision making. Technology and Learning, 22(11), 18-33.

Metzger, B. (2005) .Library facilities in Community Junior Secondary Schools in Botswana

Ruth, A (1964).A History of school libraries in Philadelphia 1874 to 1964 Available from http://libraries.phila.k12.pa.us/misc/history.html

Shan Liu, Xiao-Liang Shen, (2018) "Library management and innovation in the Big Data Era", Library Hi Tech, Vol. 36 Issue: 3, pp.374-377 https://doi.org/10.1108/LHT-09-2018-27

Showers, B (2012) Data-driven library infrastructure: towards a new information ecology. Based on a paper presented at the 35th UKSG Conference, Glasgow, March 2012. Insights – 25(2), July 2012

Williams, D. Coles, l. and Wavell, C., 2002. Impact of school library services on achievement and learning in Primary schools: critical literature review of the impact of school library provision on achievement and learning in primary level students. Available from OpenAIR@RGU. [Online].