

RFID in DAVC Library: from Infancy to Implementation

Deepti Madaan

Librarian, DAVC -10, Chandigarh

ARTICLE DETAILS

Article History

Published Online: 10 December 2018

Keywords

RFID, KIOSK, Book drop box, RUSA.

ABSTRACT

This paper covers the implementation of RFID in the library of DAV College, Sector-10, Chandigarh. Every aspect from proposing, overcoming the hurdles and setting up making it functional have been taken up by the authorities in consultation with the librarian.

1. Introduction

RFID is a new age technology in which data is retrieved and transported through RFID tags. This technology enables the readers to identify and procure the desired reading material in a short time.

RUSA has really been beneficial in bringing transformative reforms in higher education system enabling the libraries too to bring in better access, quality and expediency in tech-driven way. Financial assistance has been provided to upgrade the infrastructure of the library. The whole setup of RFID comprising RFID Security Gates, Staff Station, Book Drop Box, RFID KIOSK (Self check-in and Self Check-out), RFID Tags, RFID enabled Id cards, RFID Hand held reader have been incorporated in the library solely with the huge financial assistance from RUSA. This high end set up has made worthy readers more tech savvy in fulfilling their knowledge and informational needs. Library is providing RFID enabled smart card to the students printed with the data card printer.

2. Review of literature:

Pal and Sharma (2017) in their article "Implementation of RFID technology in library has discussed RFID as a wireless technology which involves using radio waves to trace, detect and manage objects and merchandise. According to the authors, this technology expedites library services and brings efficiency in operations and safety too. In this article scope, hurdles coming in the way of RFID implementation in libraries have been taken up. The authors highlighted its components, functioning principles of RFID technology. They discussed RFID as an innovative alternative to barcodes. The paper dwelt upon the benefits of the RFID set up in libraries. According to them, It manages information well and saves time as several items in a stack can be read simultaneously. Safety of books is ensured without even removing them. Inventory can be updated and restored in properly. Better interaction with readers, less frontal questions and better interaction with readers are its other advantages. It fastens the borrowing and return process and staff can take up other productive work. The drawback of its exorbitant cost is however the major challenge keeping in view the enormous stock in the library. RFID tags cannot be hidden in the spine of the books.

Mahajan and Pandey (2010) in their article "Application of RFID technology in libraries and role of librarian" laid emphasis

on the revolutionary technique of RFID where data is carried in transponders popularly known as tags and to retrieve data to meet specific information requirements. The authors have thrown light on the components of RFID system, application of RFID Library Management System. In their view, RFID is deployed in libraries where huge reading material is there in print and electronic form. Using RFID system, each book is attached with an RFID tag, reader, computer network and software. Readers can trace RFID marked books through RFID reader. Focusing on the advantages of RFID the authors wrote RFID technology saves the precious time of the readers and secures the huge stock of the library by automizing the operations and services. However, this useful system has disadvantages too. Its high cost, privacy concern, chances of reader and tag collision has to be considered. For the authors, it has come as a challenge to librarians and at the same time it has brought professionalism in libraries by reducing non value-added work, securing and managing inventory, tracing books etc. it is an upcoming technology which brings swiftness, efficiency, safety and transparency.

Mamdapur and Rajgoli (2011) in their article entitled "Implementing Radio Frequency Identification Technology in libraries: advantages and disadvantages" have explained the components of RFID in detail followed by the application of RFID in libraries. They laid emphasis on the advantages and disadvantages of RFID. They opined that RFID is a high tech innovation which provides automation in library operations and services. It is a versatile link between men, material and processes. Its deployment in the library leads to swift check in and checkout, efficient management and safety of inventory. With the passage of time when tags and equipment become affordable, barcode systems will give way to RFID. Its potential is immense. All the genuine concerns related are to be taken properly so that RFID brings expediency and betterment in every organization.

Seema Rani (2017) in her paper "Implementing RFID in Library- Methodologies, Advantages and Disadvantages expressed that a library is an ever growing organization where inventory has to be updated and services have to be upgraded in keeping with the changing times. In her view RFID is a new age technology which enables saving of time, safety of the stock and swiftly in services. She has discussed the components of RFID: an antennae, RFID tags etc. She mentioned in her paper that with its deployment, identification

and management of library holdings becomes easier. It provides self charging/ discharging, security provided by interface between exit sensor and circulation system, scan books with hand held inventory reader without moving them, better handling of inventory with conveyor and sorting system, long tag life from where information can be read faster than barcodes. In spite of so many advantages RFID comes with disadvantages too. According to her the system can be tempered even with household foil, tags can be removed and also it is very expensive. To sum up, it is not widely used in libraries as it is an emerging and constantly changing innovation.

3. Step by Step bringing of RFID in library of DAV College, Sector-10, Chandigarh:

Conceptualization:

RFID Technology in from A.C. Joshi Library, Panjab University, Chandigarh inspired me to deploy the same in our college library. The proposals were presented twice/thrice but budgetary constraints always proved to be a deterrent. Finally, the proposal found a place in the RUSA's upcoming projects for the college in June 2017. The proposal saw the light of the day after an year i.e., in June 2018 when it was approved for financial aid from RUSA. The process started with the inviting the tender from RFID firms. In July 2018, the RUSA Committee finalized Rapid Radio Solutions Pvt. Ltd. Ahmedabad. And with that our technical collaboration started.

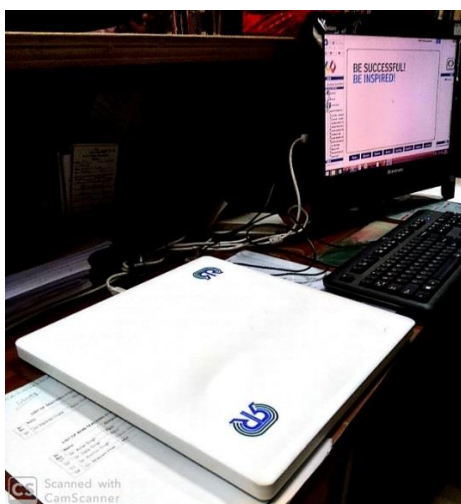
Onset of RFID technology

Communication and deliberations took place between DAV College and RapidRadio Solutions Pvt. Ltd. for getting the supply of hardware, middleware and its related services.

The hardware included:

Staff Circulation Station:

This hi-tech system enables the adding up of new books, borrowers and facilitates issue return of books at circulation desk.



RFID Security Gates: This high security gate has been designed to catch theft in case unauthorized tagged items pass through it.



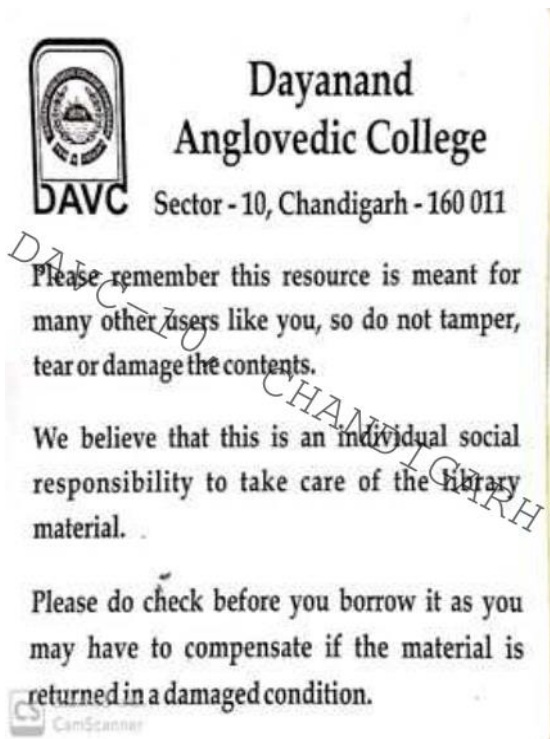
Self Check in and self-check out KIOSK: This standalone protocol provides visual and print transaction related information such as number of books issued, outstanding fine etc. through its inbuilt screen and printer. Its outstanding feature is that the readers can get the library books issued and returned on their own.



RFID Tag: RFID tag has micro chip with the unique identification number and the antenna so that the data can be transported wirelessly.



Anti-Theft Stickers: Customized anti-theft stickers have been prepared and pasted on the tag. It works for the safety of the tags.



RFID Smart Cards: These contactless smart cards are used for making identity cards, employee cards, access control and hostel cards.

Integration Module: RapidRadio middleware is a custom built application to port data from different RFID equipment item to the current LMS.

RFID Hand-held Reader for shelf Management: Hand-held reader is mainly designed for checking the right place of the books on the shelves, searching and stock verification.



Book Drop Box: It is a touch screen based multi protocol book drop mainly used for returning library books. It saves time in circulation and is useful for library patrons.

Integrating LMS with RFID

The process started after installing the RFID Hardware. This was followed by integration process i.e., integrating LMS with RFID. We were almost set to switch over to KOHA software and had a word with the suppliers for its procurement. Mr. MMS Banga Director, Contemporary Software Services Pvt. Ltd. was apprised of the ongoing RFID setup. He took into account the whole task and gave a positive response. Deliberations started between Mr. Banga and the team members of RapidRadio. It took around 3 months for the integration process. Task accomplished almost in Oct. 2018.

Tagging the print resources

The process of tagging the print resources was followed soon after overcoming all the technical hurdles. It was outsourced to RapidRadio Solutions itself. Majority of it was accomplished by them, rest was done by the staff members of the college library.

Hurdles/Challenges which came in the way

The library has been using a local LMS called Campus Wizz. It was basically designed for administration and it had library as one of the modules. Campus Wizz doesn't have NCIP/SIP 2 protocol. Our institution has a strength of more than 10000 students, Campus Whizz provided a platform where administration and library was integrated. To sustain the smooth functioning, we never wanted to temper with Campus Whizz Software.

Getting over the obstacles

College librarian, RapidRadio & LMS vendor worked together to integrate the LMS with RFID. RapidRadio provided store procedure to the LMS vendor for successful integration between LMS and RFID.

Training imparted: Training have been imparted to the library staff covering all aspects of RFID as to how to work on staff station, how the tags can be pasted, how stock taking can be done, how to use KIOSK for self issue and return of books.

RFID finally put into practice in library

- RFID KIOSK has proved to be the boon to the library. It provides:
- Hassle free issue return of books
- Many books can be issued and returned at one time.
- Students have started doing it on their own.
- Security of the inventory has been upgraded towards betterment. The system is highly reliable with meagre chances of theft. The exit gates provide option to

keep record of incoming and outgoing library users with recording. RFID tags lasts longer than barcodes. RFID tags do not come into direct contact with anything as it has anti-theft sticker on it.

- More data can be stored in RFID tags than Barcode.
- Hand held reader leads to swift shelf reading, re-shelving, sorting and searching.
- The members can drop the books in the book drop box from outside the library even after the library timings.

4. Overall benefits of RFID

RFID in library: RFID technology can ease and expedite various operations and services in the library such as check-in, check-out, inventory and shelf management, book return etc. This new age technology aids tracing lost items, streamlining operations, adding new products and securing the stock by combining library item identification and security bit, thus eliminating attaching security strip and reducing labour costs.

For the staff, the RFID technology is very useful as it reduces the time to issue, procure, shift and sort library

materials. Handheld reader ensures at least 20 times quicker management of the inventory comparing to existing barcode system. This technology reduces repeated scanning of individual items at the circulation counter during check in and check out. It also eliminates the need of physical shelving and de-shelving when inventory is taken in the RFID system.

It is beneficial for library patrons too as it helps them in quick and self check in and check-out, tracing the desired item, flexible timings. RFID is more useful than barcode system as it provides better circulation of library materials, auto detection of unauthorized items going out of library. This technology can be used in harsh environment.

5. Concluding remarks

With heavy footfalls in the library of DAV College, Sector-10, Chandigarh RFID has been proving to be a game changer.

Efficiency and expediency in services, better retrieval of information, lessening of staff work load, safety of the inventory and student friendly ambience has been ushered in the library.

References

1. Mahajan, Kartika D. and Pandey, Prabhat and Pandher, Balbir Kaur **Application of RFID Technology in Libraries and Role of Librarian.**, 2010. In 12th MANLIBNET Convention 2010, Jaipur (India), 22-24 November 2010. [Conference paper]
2. Mamdapur, G. M., & Rajgoli, I. U. (2011). Implementing radio frequency identification technology in libraries: advantages and disadvantages. **International Journal of Library and Information Science**, 3(3). http://www.academicjournals.org/app/webroot/article/article1379512798_Mamdapur%20and%20Rajgoli.pdf
3. Pal, N., & Sharma, A. K. (2017). Implementation of RFID technology in library. **International Journal of Digital Library Services**, 7(2), 70-78. <http://www.ijodls.in/uploads/3/6/0/3/3603729/8ijodls217.pdf>
4. Seema Rani. (2017). Implementing RFID in Library- Methodologies, advantages and disadvantages. **International Journal of Library and Information Studies**, 7(4), 167-171. http://ijlis.org/img/2017_Vol_7_Issue_4/167-171.pdf