

Every Reader a Library, Every Library its Reader: Designing Responsive Libraries for Our Communities

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Abstract:

The National Library Board Singapore (NLB) envisions the public libraries in Singapore to be a network of inspirational and creative library spaces that are information-rich, accessible and community-supported to promote reading, learning and knowledge creation in Singapore. In the past year, NLB has opened a new public library – the library@orchard, and revamped the Sembawang Public Library.

The paper uses the new library@orchard and Sembawang Public Library as key case studies to show how these libraries are designed in line with NLB's vision for Singapore public libraries of the future; in particular, how they meet the design outcome of differentiated learning spaces for different user groups to inspire reading and facilitate learning and collaboration. It will also showcase how NLB engages its users to design libraries that respond to user needs.

Keywords: Public Libraries, future libraries, user engagement, library@orchard, Sembawang Public Library

1. Introduction

The National Library Board Singapore (NLB) manages a public library network of 26 public libraries across the island. NLB's new Libraries of the Future (LoTF) Masterplan seeks to revamp the physical infrastructure of its library network to enhance the library experience for Singaporeans and residents.

NLB last embarked on a major revamp of its libraries under its Library 2000 Masterplan, going from providing basic services at seven public libraries in 1996, to a comprehensive network of 3 regional libraries, 10 mid-sized libraries, and 13 small libraries today. Earlier Library 2000 and Library 2010 blueprints focused on expanding the physical library network and services offered, and building the digital infrastructure respectively, to support reading and learning. With aging libraries, changes to the way people read and learn today, and rising expectations from our public, it is timely for NLB to relook the services and experience provided for the public at its public libraries.

The LoTF Masterplan envisions the Public Libraries of the future as a network of inspirational and creative learning spaces that promote reading, and are accessible and community supported. This vision recognises that libraries are no longer just transaction points for borrowing books; people now visit libraries to discover, learn, converse, collaborate and create. In response, the paradigm shift for our public libraries expands the traditional library model of consumption-based learning through the loan of library materials, to include fluid modes of learning where users are invited to take a more active part in knowledge creation.

Furthermore, library users today have increasingly complex learning and information needs. Technological advances such as the penetration of Internet access and the advent of mobile devices with access to digital content have also changed the way that people consume information. Our libraries have to be both physically and digitally ready to support changing knowledge and learning needs. Library spaces will be redesigned to integrate the browsing and discovery of digital resources with the use of existing physical resources.

Physical library spaces can complement this by serving as inspiring and inclusive community gathering spaces that cater to different demographics, learning needs and styles, in order to keep reading, learning and knowledge sharing appealing amongst an increasing variety of activities competing for users' attention.

The reconfigured space arising from the revamps of the public libraries thus aims to meet three main outcomes:

- 1) Differentiated learning spaces for the different demographic groups to inspire reading and facilitate learning in various ways;
- 2) Reading spaces integrated with our physical collections and digital content for a more immersive experience where readers are inspired to imagine, reflect and create;
- 3) Increased accessibility within the library (for people with impaired physical mobility, as well as better navigation and way-finding for general users).

In the past year, NLB revamped the Sembawang Public Library, and opened a new public library – the library@orchard. These two libraries represent our first steps towards realising the vision of the LoTF Masterplan. This paper will focus on featuring how we consider user needs to meet the first design outcome above, with the two libraries as examples.

2. Inclusive Library Spaces

The Singapore public libraries typically engage library users from the very young to the very old. Our libraries are very well-used by children and their parents, and we also expect to serve a growing number of senior citizens due to an aging Singapore population. Future library spaces will thus need to be ready to support our aging population while being sensitive to the needs of different groups in society. To address this at a basic level, universal design principles will be applied across all spaces to ensure that libraries continue to be usable and accessible.

When bringing together members of a diverse community within a shared space, it is vital to recognise that different user groups have distinct – and sometimes, conflicting – needs for their reading and learning environments. For example, a learning space that encourages the early literacy skills of reading and singing may be intrusive to those who want a quiet area where they can focus on their reading. In libraries with limited space, it is therefore important to understand the needs of our different user groups to zone spaces for differing needs most effectively and efficiently.

What the library wants	Encourage Reading and Lifelong Learning			
	Foundation & Reading for Pleasure	Discovery & Curiosity	Work Spaces & Deep Reading	Mental and Social Engagement
Broad User Groups	Children	Teens	Working Adults	Retirees (Seniors)
What people need in order to achieve the library desired outcome	Safe & Emotionally Engaging Spaces	Flexible & Multi-purpose Spaces	Quiet & Non-Intrusive Spaces	Familiarity & Sensitive Spaces
	Achieved by age appropriate design and zoning principles.			
How people might actually use the space (unintended)	Childcare, Playground	Social Hangout	Waiting Area, Charging Station, Social Meeting Point, Rest/Sleep	

Figure 1: A summary of library space requirements of different broad user groups that we have observed at our libraries

Our two newest libraries – the library@orchard (OCPL) and Sembawang Public Library (SBPL) – were opportunities for NLB to design the libraries according to the design outcomes identified in the LoTF Masterplan, and to design certain spaces with specific user

groups in mind, as part of the service focus of the library. These are namely the teens and young working adults groups for OCPL, and children and parents for SBPL.

The two libraries serve different communities and purposes and have different focus areas. A quick overview of the two libraries is provided below. SBPL was revamped and re-opened at a slightly larger site in the same shopping mall after renovations while library@orchard is a new library that was re-launched in a new location along Orchard Road after it was first closed in 2007.

	library@orchard (Opened in October 2014)	Sembawang Public Library (Re-opened in November 2014)
Size	Small library, approx. 1,700 sqm	Small library, approx. 1,700 sqm
Type of library	Niche library with design, applied arts and lifestyle focus	Public library serving the general needs of its community
Location	Within the <i>Orchard Gateway</i> shopping mall in the middle of Orchard Road – the main shopping belt in Singapore	Within <i>Sun Plaza</i> , a suburban, family-focussed shopping mall located by the MRT station and main bus interchange for the Sembawang residential estate.
Service focus	<p>In synergy with its location in Singapore’s prime retail district, the library has a specific focus on Design.</p> <p>This theme informs the library’s overall aesthetic, as well as its collection and programmes.</p> <p>While the library intends to serve design professionals and practitioners, it is expected that its primary users will be a more cosmopolitan client-base of young adults and working professionals. Hence, the library will also include supporting collections that are of interest to our target group.</p>	<p>The service focus of Sembawang Public Library is on families, particularly those with young children of lower-primary age and below. It aims to facilitate the creation of shared reading experiences for these families by providing community-supported services that encourage intergenerational interactions.</p> <p>The library will continue to serve the general interests of other user groups.</p>
Key features	<p>First double-storey boutique library.</p> <p>“Design is for everyone” philosophy with its focused collection, programmes and services.</p> <p>No children’s section or collection.</p>	<p>Library design draws from Sembawang’s rich shipyard and shipbuilding history.</p> <p>Larger children’s section, with a special babies and toddlers section to cater to young families living nearby.</p>

3. Understanding Needs through User Research and Engagement

Unlike most of other libraries in our public library network, OCPL is not located within a suburban residential district. Its location within an iconic retail belt and an international tourist attraction means that the library would need to be designed for a very different audience. We saw this as an opportunity for NLB to reach out to older teens and young working adults ('young adults'; typically in the age range of 16 to 35) – user groups who traditionally do not use the library as much, but who visit the Orchard Road retail belt regularly as part of their lifestyle. The Design Thinking process, first trialled for OCPL, allowed us to gain insight into the needs of these user groups that we engage with less, and design library spaces in a responsive manner.

In comparison, SBPL is located in the heart of the Sembawang residential estate, within the Sun Plaza suburban shopping mall, and serves mainly residents of the estate and surroundings. The library was first open in the year 2000 and the opportunity to revamp the library in 2014 allowed us to relook the population profile in the estate in terms of age, family types, and library usage.

NLB's library planning process includes the study of various data to understand the community that the library serves. These include analysing population demographics, library membership and historical loan data, and geospatial analysis of the library's catchment and reach. In addition to data analysis, we also engaged our users through different means to understand and infer their needs. The user engagement process loosely follows Design Thinking methodology, and typically includes user interviews, surveys, and feedback gathering.

library@orchard – Design Thinking and user insights

In designing the new OCPL, NLB, in collaboration a local Polytechnic, employed the methods of Design Thinking to engage library users in the design process. This was the first time Design Thinking methodology had applied to new library design in a structured way. User input was sought at two critical points of the design process:

- a) During the first stage of *user empathy and ethnographic research*: Interviews were conducted to understand user needs and wants, and identify opportunities for the NLB to create value. These in-depth interviews were conducted with over a hundred people who worked at or visited Orchard Road regularly and culminated in the creation of user personas that served as inspirations for conceptualising services and spaces in the library.

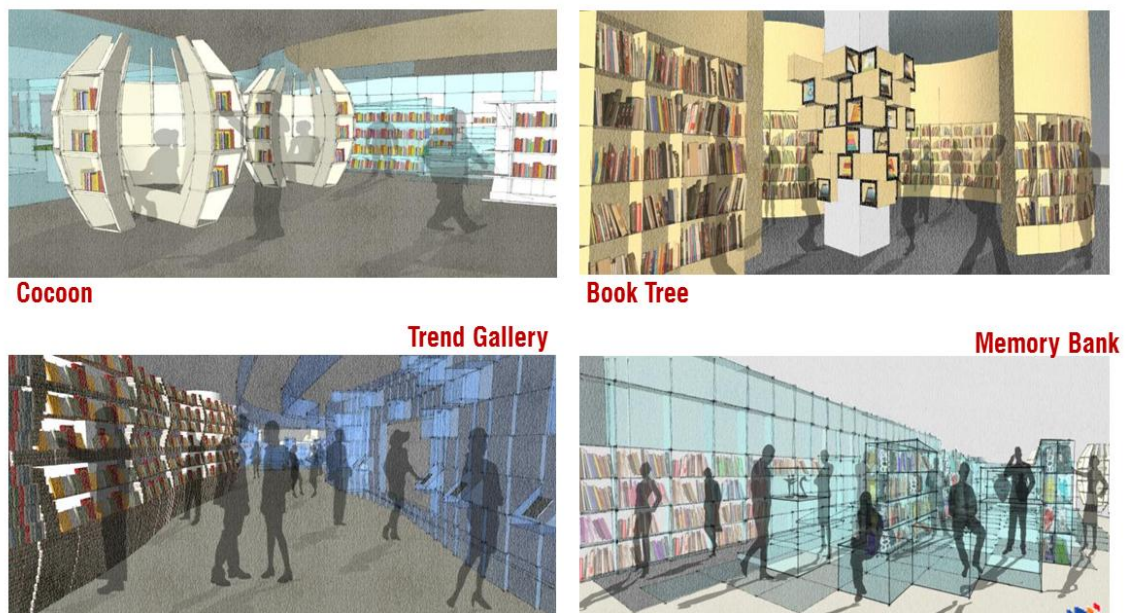


Figure 2: Examples of ideas and prototypes for spaces in the library that arose from the Design Thinking process

- b) Through a feedback mechanism during the second *concept design and prototyping* stage: Prototypes embodying low-fidelity solutions to user needs were developed, and put on display for members of the public to interact with. Over a thousand library users participated and provided feedback as part of the prototype exhibition. A number of in-depth co-creation sessions with identified stakeholders were also conducted and designs were further refined and developed.



Figure 3: Low-fidelity prototypes were set up at a nearby library for members of the public to test and provide feedback on

The extensive information gathering process provided us with insights into the expectations and aspirations of today's library users. Some of these insights are applicable not only to OCPL, but also to design considerations for future public libraries

We found that our target users of young adults are drawn to the overall experience of the library, and the desired experience often differs from user to user. Users view the library as a space for different activities – as a place for 'escape' or sanctuary from the bustle of Orchard Road as well as a productive space to work alone or with others.

Many book lovers also expressed a nostalgic desire for a 'bookstore' experience of being immersed in a tranquil and peaceful place of books. At the same time, users were optimistic about the potential for libraries to enhance their services with new, digital technologies. These insights led us to consider how we could design the library to create immersive experiences for library visitors, and incorporate functional digital spaces or elements that merge well-loved traditional library experiences with usable and intuitive new technologies.

Sembawang Public Library – Data analysis and user interviews

A study of the population data of the Sembawang residential estate suggested a predominance of young, two-generational families with children of primary-school age or younger. According to the Singapore Census, the Sembawang area has a relatively high proportion of young children aged 0-9, as well as adults aged 30-40, compared to the national average as well as to the neighbouring estates of Woodlands and Yishun (where the Woodlands Regional Library and Yishun Public Library are located respectively). Conversely, populations of teenagers and older adults (above 50) are relatively small.

This is further supported by the library's loan trends, which reveal consistently high use of the children's collection over the past few years. SBPL's children's collection is the most well-used collection within the library, and has one of the highest usage across all NLB Public Libraries. Both demographic statistics and collection usage data pointed to a strong presence of young, nuclear families within Sembawang's resident population. We also expect more young families to be moving into Sembawang due to the many new residential developments in the area. This thus influenced the decision for SBPL's service focus to be directed towards young families.

As part of our user research and engagement process, a total of 70 people were interviewed in the library. The comments received formed the basis of key ideas in the library's design. The majority of comments were concerned with the number, variety and arrangement of seating in the library. Reading areas were uncondusive as they were mostly created out of available space between bookshelves. Users also wanted more varied types of seating that were more suited for different activities.

Parents felt there was a lack of spaces for parents and children to sit and read together. Some also asked to cater for more interstitial spaces where parents and children could be physically close together, while still engaging in separate activities. Lastly, parents also expressed a desire for more spaces for children of specific ages, for example, very young children and toddlers. All in all, this suggested that our library space design could do more to support whole-of-family interactions.

4. Designing Libraries for our Communities

The following sections will touch on how space within the new OCPL and SBPL were zoned and designed to meet the service focus of the two libraries and differing needs of library users effectively.

Studio and Loft spaces at library@orchard

As a library that focuses on design in many fields, consideration was given for the interior of library@orchard to stand out from the other public libraries, and represent the library's focus. Style and ambience were identified as playing integral roles in shaping a unique overall library experience for our users. Furnishings and fittings – chairs, shelves and lights, were chosen to be design features in themselves. The customised bookshelves, for example, were designed to look fluid and organic in shape.

As a reading sanctuary in the heart of a busy retail district, library@orchard also wanted to offer users a sense of respite from the crowds and bustle of the surrounding shopping areas. To that end, and with the library's relatively small area in mind, slim, lightweight and minimalist furnishings and colours were used to inspire a sense of lightness and openness. This also allowed the library to give prominence to the books and collection.



Figure 4: Curved, fluid bookshelves on the first level of the library



Figure 5: Curved bookshelves on the upper floors with built-in signage and icon to aid in way-finding, and space for content display



Figure 6: Specially chosen seat and light fixtures on the upper floor of the library. The floor-to-ceiling window panels allow for ample natural light and sense of openness.

In place of the norm of demarcating spaces by age segments in our other public libraries, OCPL is zoned according to function and type of use to meet the different desired experiences of our users at the library – as a reading sanctuary, and also for productive work and discussion. Just as there is a need to accommodate different forms of learning and different groups of users, so library spaces could be transformable, reflecting a balance between quiet, intimate spaces, and casual, social ones. This is reflected in OCPL’s creation of two main zones over its two floors, separated by an internal staircase that provides a natural transition between the two areas.

The lower floor takes its inspiration from a studio, where collaboration and peer-to-peer sharing are encouraged. In this space, the library hopes to bring together people of diverse interests and backgrounds to build vibrant creative communities.

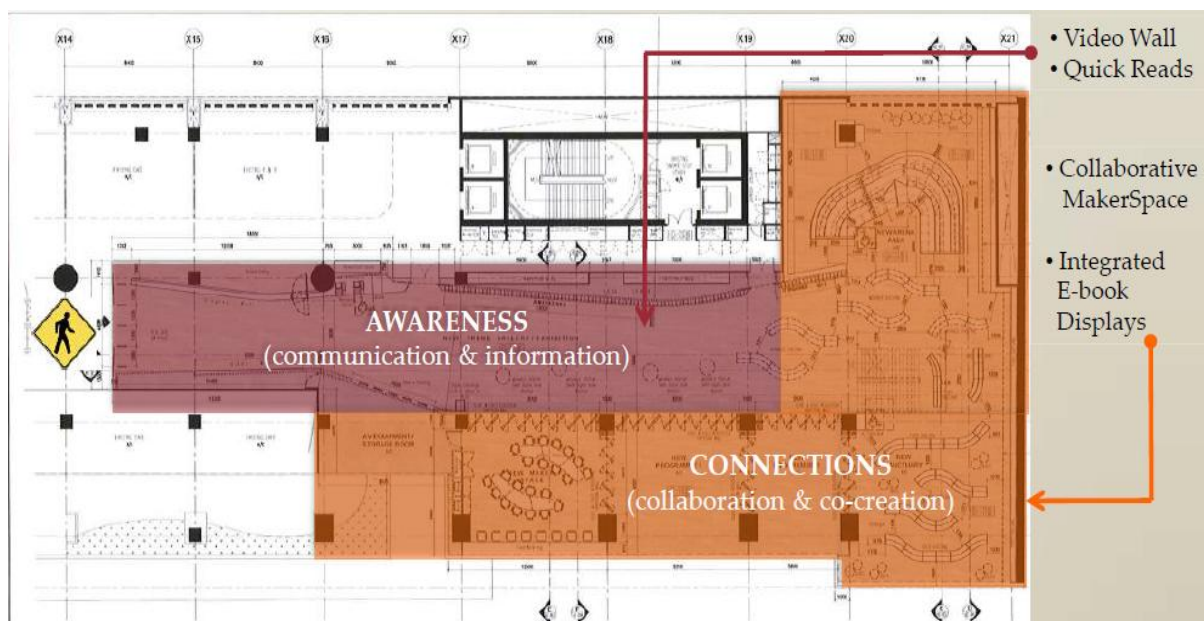


Figure 7: Service zones within the Studio on the lower floor

Equivalent to a living room or social area, the first level is designed to draw new users in from the outside and is primarily a space for casual users. This social space has an atmosphere of activity and buzz, and will be the library’s main collaborative and creative zone, with spaces for programmes and sharing.

The *Make* and *Imagine* spaces in the *Connections* service zone are adjacent flexible programme spaces that can be combined for larger programmes. 3D printers and design software are made available during creative workshops for aspiring creators. Other types of hands-on design-related workshops – those in the fields of animation, digital design, or story illustration for example, are also conducted in this space. The spaces can be flexibly used for library users to plug in their own devices for individual work.



Figure 8: The Make zone in use for a workshop

The *Arena*, an open reading area in the same zone, is also designed for small-scale programmes and informal sharing sessions, or as areas for users to sit and browse. The casual sitting plan in the *Arena* makes it a popular space with our teen and young adult users to browse and read, or to work on their own devices.



Figure 9: The open arena

At the same time, inspiration, reflection, and contemplation are equally important to our users in the creative process. The library's higher level is a quiet retreat for thinkers and book lovers looking for an immersive, intimate and personal reading experience. Home to the bulk of the library's print collection, which is separated into five design collections, this level also incorporates platforms for like-minded book-lovers to interact and connect with one another.

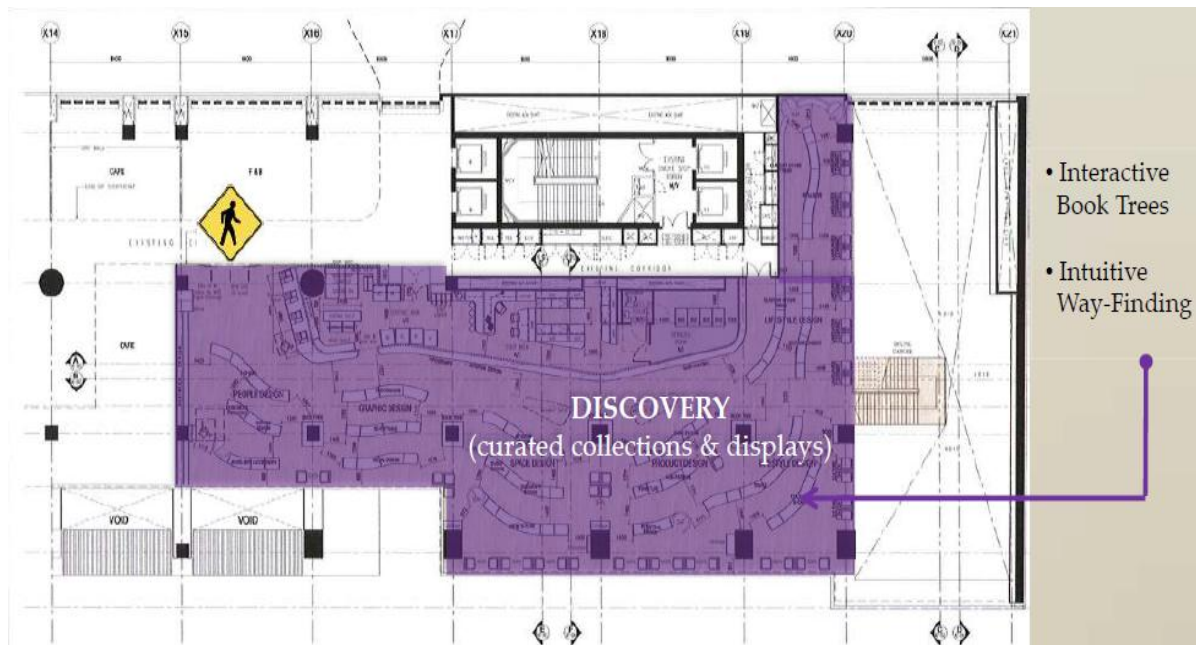


Figure 10: Service zone within the Loft on the library's higher floor

Seats on the quieter upper level provide space for solo reading and contemplation. The single-seat reading cocoon features are also popular with user who want to retreat into a quieter space, and can also be a signal to others to be quiet.



Figure 11: Single-seat reading cocoons

The *Book Trees* on the upper floor allow our librarians and users to share and receive multi-format reading recommendations with each other, and act almost like quiet common meeting points in the library. They are one example of new services developed to meet our users' preference to merge the convenience and functions of technology with the well-loved physical element of the library and books. The centrepiece of each collection cluster, the *Book Tree* allows staff and users to conveniently recommend and retrieve both physical and digital materials.

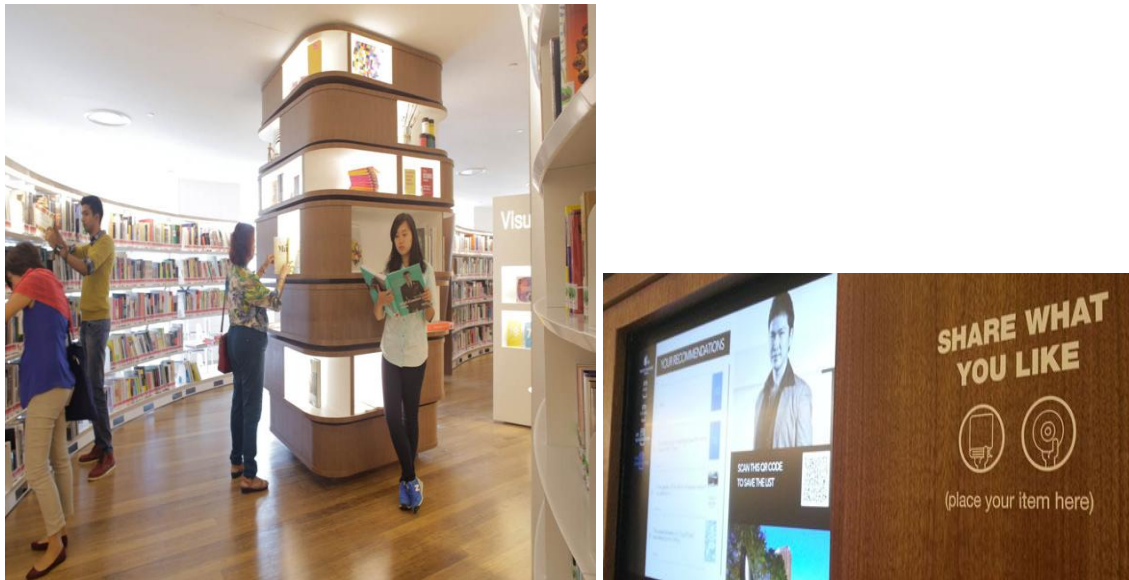


Figure 12: The Book Tree featuring physical content and related display pieces in the image on the left, and its digital interface on the right.

Revamped children and family spaces at Sembawang Public Library

To foreground the SBPL's connection to the local community heritage, a modern 'Industrial and Maritime' design theme was selected, in view of Sembawang's history as a shipyard and shipbuilding area. This theme translated into industrial concrete-tile flooring, and unpolished, finishes like timbre and metal. Key visual highlights in the library include seating areas inspired by shipping containers. The library's design also included elements referencing local landmarks, for instance, an evocative photographic print of Sembawang Jetty.

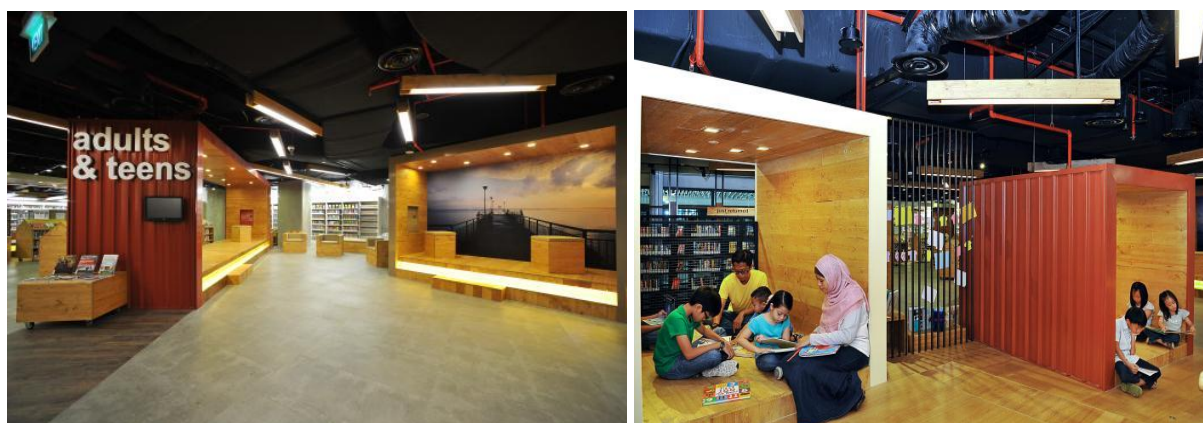


Figure 13: The history of the area is referenced and kept alive in the library's interior design, including a backdrop image of the Sembawang Jetty landmark in the image on the left

To realise its service focus, SBPL was designed to promote whole-of-family interactions and inter-generational learning. This translates into an extensively redesigned Children's section in response to the results of our user research, to create conducive and engaging environments for children at different stages of development. SBPL also maintains a distinct space for adults/young adults with quiet areas for reading that has a better separation from the children's areas, as well as general activity spaces for all.



Figure 14: Overcrowding in undifferentiated spaces at the pre-renovated SBPL and some user comments on the spaces

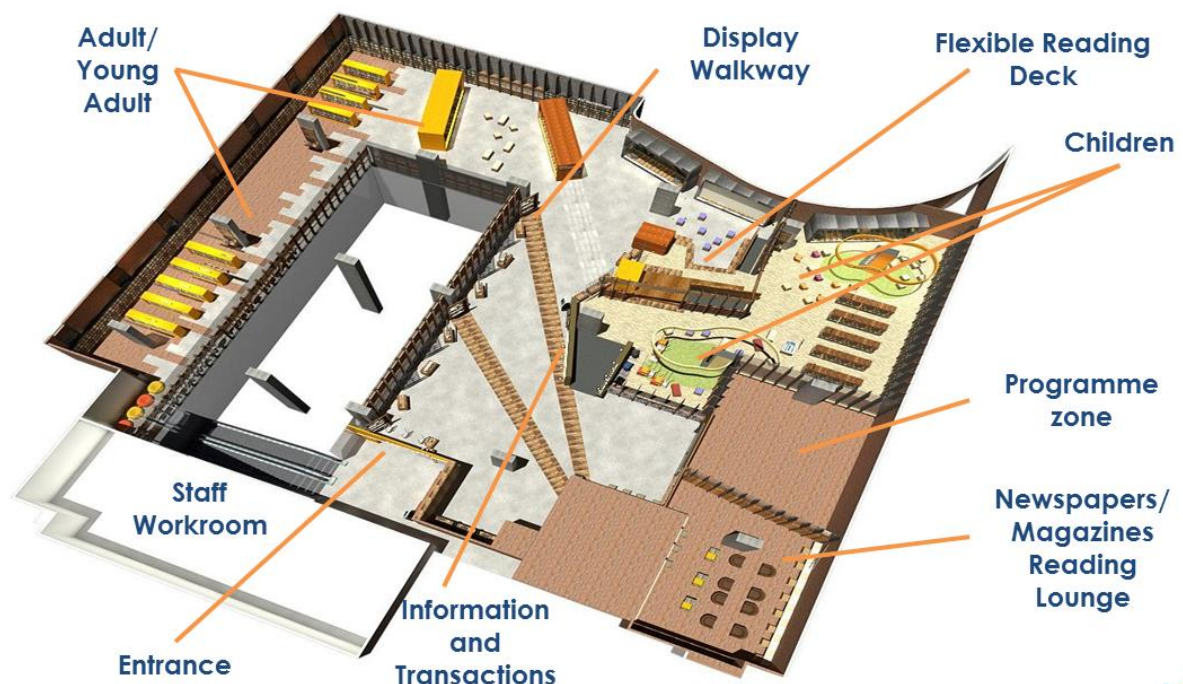


Figure 15: New space zoning at the revamped SBPL, where there are clear spaces and a boundary area with flexible seating arrangements between the children's and general adults sections

In designing the space for young children and their parents, we took reference from the new *Early Literacy Library* that was launched at our larger Jurong Regional Library. Elements of kinaesthetic learning through the placement of toys/educational aids and interactive digital stories were incorporated into the children's section at SBPL.

A separate 'Babies and Toddlers' area was set aside for very young children (aged six and below) within the children's section at SBPL. Envisioned as a safe space for babies and toddlers to learn through play and exploration, together with their caregivers, this area also houses the Early Literacy collection – a collection of board books and picture books for young readers. The Babies and Toddlers area was designed as a contained "crawl space" with a clear boundary from the rest of the children's spaces. The central feature of the space is a tactile "grass" mound, framed by browsing book bins of children's height to encourage discovery and exploration of the collection. The open, circular layout coupled with low shelves and seating ensures that parents have maximum visibility of their children. The area is fully accessible by parents with strollers, and a small area was created for these strollers to be conveniently parked away.



Figure 16: Specially designed space for Babies and Toddlers and their parents within the Children's section

Spaces were also designed to accommodate varying degrees of involvement in a child's reading and learning activities. Within the children's area, the *Reading Deck* is a casual, informal arena-style reading space where parents/care-givers can sit comfortably with their children. As child-friendly spaces, especially those in mall libraries, are high-use spaces that typically take on many functions, this area was flexibly designed to also accommodate children's programmes such as storytelling sessions.



Figure 17: Storytelling session at the Reading Deck

We also found that there were limited spaces for parents seeking to do personal and sustained reading with their children. To support the objective of encouraging more meaningful, whole-of-family interactions, a family-friendly “inter-generational learning zone”, in addition to the conventional Children’s and Adult areas, was included in the library. This area is designed to support learning and reading between parents/care-givers and children, and is located such that it allows a degree of overlap between the adult and children’s section. The *Reading Deck* thus also includes a small number of private “reading booths”, which are cosy nooks designed to fit an adult and one or two children.



Figure 18: Nooks for parent-child reading

Parents and children engaged in different activities, or reading in separate areas should nonetheless have visual access to one another. By extending this principle to spaces beyond the children's area, a transition zone between the children and adult's collection areas was created, where caregivers could casually keep watch over their children, without needing to be physically present in the children's space. Visual and physical barriers were consciously avoided, providing caregivers with a clear line of sight towards the children's section.

5. A Continuously Responsive Library Network

OCPL and SBPL could be considered our early prototypes for designing libraries of the future. It has been only about six months since the libraries were opened in late 2014, and we are still in the process of observing and speaking to users post-opening to learn about what design features work and what do not. Generally, the libraries have been well-received by our users since their opening and we have been receiving positive feedback.

The iconic design of library@orchard has attracted many new users and members to the library – there have been about 900 new members registered at the library since it opened – and has been the subject of many social media posts. Post-opening interviews show that some of these new users are young adults who work in the area who do not usually visit the library, and that the new ways in which we have designed the library and collection display inspires them to pick up an item to borrow. In a short survey conducted with 55 users, more than half of our respondents felt that the library has exposed them to books they normally do not read.

The *Make* and *Imagine* spaces and workshops conducted in them likewise have attracted users who appreciate being able to learn through hands-on activities and different types of design applications. The two spaces are similarly popular with users as a productive work space when there are no activities. The workshops are currently conducted by our partners in the design, art and publishing industries, as we grow our community of design-enthusiasts and hobbyists who may in turn facilitate sessions with other users.



Figure 19: Examples of Instagram posts by OCPL users

Library users at SBPL have also written in with compliments for the revamped library, commenting on the improvements in design compared to the old SBPL. They also laud the conducive environment for families to visit the library and read together, and the ease of navigating the library (with its large clear signs). The new library opened before the rest of the shopping mall it was housed in had completed its renovation. Work in the mall is still not fully completed but the library had seen an almost 10% increase in visitor numbers since it re-opened over the same period last year. A post-opening survey is also being undertaken now to survey users about the new space.

The libraries also continue to be an adaptive space after opening, as we continue to learn about user behaviour in the new libraries. For example, the recessed boxes at the open arena at OCPL were originally meant to display large books, but we have noticed that library users were leaving browsed books in them instead. Now, these boxes have become a place for users to leave items they have browsed for other readers to pick up. We try to adapt our processes to user behaviours so that the spaces will be natural to them, and staff clear the boxes at the end of the day.

There are other learning points from the two libraries to be considered for future library designs. At SBPL, one common concern is the noise generated by children as they move excitedly up and down the ramps that were built to allow seamless access to the children's section, and the reading deck. There are also ongoing challenges with user expectations and behaviour that we could explore to manage through library design. For OCPL for example, we located the book drop at the entrance to the second floor of the library, rather than at the main entrance on the first floor due to site considerations. Although there is signage to direct users to the book drop, we still receive a number of queries on the book drop location as our users are used to it being located by the main entrance at our other libraries. Locating books within the collection clusters at OCPL is also an area for improvement as some library users are unused to the different way that the collection is laid out.

NLB plans to revamp our public libraries progressively, and to continue to design new libraries that are responsive to the community and user needs. Along the way, learning points from each new library and results of prototypes will continuously be brought forward to improve the design and services of the next library.