

## INTERACTIVE LIBRARY

Wesam Haririe<sup>1</sup>, Mohammed Fekry<sup>2</sup>

<sup>1,2</sup>College of Architecture and Design, Effat University, Qasr Khuzam St., Kilo.2, Old Mecca Road. P.O. BOX 34689, Jeddah 21478, Saudi Arabia

E-mail: [whjamalharirie@effatuniversity.edu.sa](mailto:whjamalharirie@effatuniversity.edu.sa), [mofageha@effatuniversity.edu.sa](mailto:mofageha@effatuniversity.edu.sa)

Received: 25.04.2020

Revised: 30.05.2020

Accepted: 20.06.2020

### Abstract

Education can promote economic growth and stability, and overall, it can also increase community awareness. One of the most important benefits of education is to improve personal life and help society operate easily and effectively. Interactive learning tools help improve personal learning and working performance. This study aims to develop an interactive library that creates the opportunity for users to interact by sharing their knowledge and experience. Entertainment zone is added inside the interactive library as an alternative ambient to smooth the interaction process. There are three attractive libraries from Austria, Canada and China considered for the case studies. The proposed space program of this study covered four main components namely educational, entertainment, administrative, and services. The selected site location for this project is located at Al Shati District, based on the site criteria evaluation. The interactive library creates an ambient for users to establish their social skills such as self-awareness, innovation and confidence. Interactive learning helps concept internalization and problem resolution.

**Keywords** -- Interactive Library, Learning and Working Performance, Education, Social Skills

© 2020 by Advance Scientific Research. This is an open-access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)  
DOI: <http://dx.doi.org/10.31838/jcr.07.08.148>

### INTRODUCTION

Community programs, direct librarian assistance and basic Internet access, libraries provide important equal access opportunities for people seeking health information and services [1, 2]. Libraries make communities healthier and connect communities together. In an era of expensive education, public libraries provide free information and educational opportunities for all. They preserve history, and more importantly, truth. Libraries are important partners in sustainability and important partners in child development.

Apparently, the practice of reading books creates cognitive engagements that improves lots of things, including mental stimulation and reduce stress [3]. Reading can enhance personal vocabulary, memory and stronger analytical thinking skills. Reading helps gain general knowledge, improves the readers focus and concentration, as well as leads to tranquillity [4]. It could also be considered as free entertainment. Leisure reading has been in decline for several years since the attractive distractions became widespread such as smart phones and computers. People nowadays prefer to read online more than a physical book.

Knowledge exchange is when people share and discuss the knowledge that they have gained through work experience, success and challenges. The exchanging knowledge and sharing experience develop several elements in a personal character such as innovation and confidence [5].

There are several other benefits coming from exchanging knowledge includes saves money, time and effort. It helps improve working efficiency, including developing new and better problem solving methods. Interactive learning has collaborating new ideas and insights from individuals, which leads to innovation as well as strengthens personal academic profile. Studying in groups is an example of interacting. Group study can give many benefits such as eliminates student from stalling as well as development the bonding between students. It also helps student to sharpen their study skills and helps them learn faster.

### CASE STUDIES

There are three case studies considered in this study. Library and Learning Centre University of Economics Vienna, Austria is chosen because of the form and the challenge it had due to the site location and the existing surroundings. The project is inspiring by the different needs of the college and the public library. This case study shows a successful integration between the main elements of the college and the new library. Although the building is modern yet it has the original ZahaHadid identity.

Surrey City Centre Library, Canada is chosen as case study because of its unfamiliar form. So, this case study provides the understanding and the distribution of the spaces inside. The design shows a successful example of an interesting environmental solution in the form. The concept behind the form is also unusual. Tianjin Binhai Library, China is considered as one of the as a case studies because the interior concept and its interior distribution of the facilities around the atrium. The shading and environmental design is important for this project. This case shows the elements and functions of a library and how it can be a place for reading, gathering and learning at the same time.

### Library and Learning Centre University of Economics Vienna, Austria

Library and Learning Centre University of Economics Vienna located at Austria is designed by ZahaHadid Architects (Figure 1) [6]. The exterior of the learning and library center has two elements with contrasting colours, separated by glass joint as well as shell and shadow. These different colors help to orientate and understand the two main areas of the building. Visitors can enter the library and student management office through ramps and stairs that circle upward from the ground floor. Different areas on the upper level are connected to the gallery by platforms, bridges, and terraces [6]. The learning center includes a library, tutorial room, administrative office, student center, bookstore, cafeteria and event space. In addition, the Learning and Library Center also provides language laboratories, tutorial rooms, administrative offices, student centers, bookstores, cafeterias, club rooms and event spaces [6].

The new library and learning center is a polygonal area in the center of the new university campus. The external circulation of the master plan facilitates the interior of the library and learning center. The master plan outlines the different levels of the building. The library and learning centre's design takes the form of a cube with both inclined and straight edges. The straight lines outside the building will separate when moving inwards, and have curves and fluency, forming a free-form internal canyon that serves as the main public plaza in the center and creates corridors and bridges to ensure a smooth transition between different floors [6]. All other facilities of the library and the learning center are housed in a separate space, which is also divided into two independent ribbons, intertwined with each other to close the glass lighting space. The outer edge of the building is sharply cut, and its alignment contrasts sharply with the edge of the site [6].

**Surrey City Centre Library, Canada**

Surrey City Centre Library located at Canada is designed by Bing Thom Architects (Figure 2) [7]. The LEED Gold Certified Surrey City Centre Library marks the next stage of a major civic investment in the urban renewal of Surrey. With the advancement of easily accessible electronic information, the role of libraries is evolving, and the collection of books is no longer the main focus. Bing Thom Architects built a library near Vancouver, which has sloped concrete walls, curved windows, and sharp corners similar to the bow, where these inclined walls provide shadows [7].

Providing a leisure environment is a key issue in the design process. The northern end of the building is very sharp, like a bow, and the window contains both curves and points, both of which have become popular. The core of the interior is the "living room", which is a double-height reading area, lined on both sides, overlooking the public square. The architectural design aims to provide reading, learning, especially as a space for community gatherings [7]. The library has large windows and a comfortable entrance with clear lines of sight, allowing visitors to quickly enter the space. There is also an upwardly curved central atrium and two skylights that allow natural light to enter the building. The sculptural form of the building consists of concrete walls, which are partially inclined inwards, which provides visual appeal while minimizing the access to solar energy.

**Tianjin Binhai Library, China**

Tianjin Binhai Library located at China is designed by MVRDV, Tianjin Urban Planning and Design Institute (Figure 3) [8]. MVRDV worked with local architect TUPDI to complete the Tianjin Binhai Library, a 33,700-square-meter cultural center featuring a luminous spherical auditorium surrounded by floor-to-ceiling bookshelves. The undulating bookshelf is the main space installation of the building, which can be used not only to frame the space, but also to create stairs, seats, layered ceilings and even shutters on the facade [8]. The master plan for the region was developed by the German company GMP-MVRDV, and it was found that it was difficult to adapt the entire process to the allocated space. Therefore, this reorganized the team to create a spherical auditorium in the center [8].

The mass of the building protrudes upward from this position and is pierced by the spherical auditorium in the center. Bookshelves are arranged on both sides of the sphere, extending from the stairs to the seats, and even extending along the ceiling, forming a illuminated terrain. These contour lines also extend along two complete glass facades, which connect the library with the External Park and internal public corridors and serve as shutters to protect the interior from excessive sunlight, while also creating bright and uniform interior [8]. Most importantly, it is clear that the people of Tianjin have embraced this new space and it has become the original urban living room. The atrium of Tianjin Binhai Public Library has been carefully designed to look

like a 3D eyeball, looking out from the glass curtain wall of the building. The five-storey space is surrounded by floor-to-ceiling bookshelves, which are staggered at different heights to form the shape of eye sockets, while the spherical luminous auditorium in the center forms the pupils.



Figure 1. Library and Learning Centre University of Economics Vienna, Austria [6]



Figure 2. Surrey City Centre Library, Canada [7]



Figure 3. Tianjin Binhai Library, China [8]

**SPACE PROGRAM**

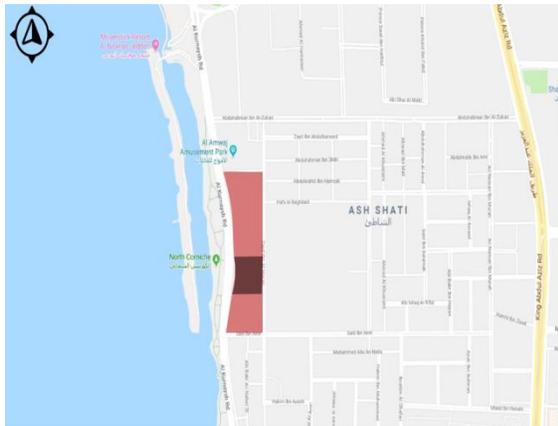
The space program of this study consists of four main elements namely educational, entertainment, administrative, and services. The gross floor area and the footprint of the zones are tabulated in Table 1. The educational zone consists of library, lecture hall, study room, classrooms, labs, workspaces, exhibition and conference hall. The entertainment zone consists of indoor and outdoor sitting area, café, theatre, gaming zone and clubs. The administrative zone consists of office, admin, meeting rooms, seminar rooms, lounge and washroom. The services zone consists of resting room, lockers, prayer rooms, washroom, waiting room, clinic and storages. The total used site area for this project is about 20200 sqm.

Table 1. Space Program

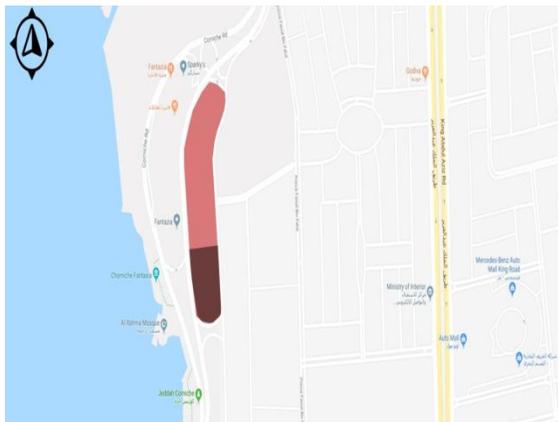
Zones	Net Area (m <sup>2</sup> )	Gross Area (m <sup>2</sup> )	Floors	Footprint (m <sup>2</sup> )
<b>Educational</b>	11000	14300	4	3575
<b>Entertainment</b>	7000	9100	1	9100
<b>Administrative</b>	1000	1300	3	433.3
<b>Services</b>	3000	3900	3	1300
<b>Total</b>	22000	28600	11	14408.3
<b>Total site area around</b>				<b>20200</b>

**SITE SELECTION AND ANALYSIS**

There are two site locations are proposed for site evaluation. Figure 4 shows the Site 1 located at Al Shati District, near to Al Kurnaysh Road with site area of 20000sqm. Figure 5 shows the Site 2 located at Al Shati District, near to Al Corniche Road with site area of 20000sqm. There are several site criteria are used to evaluate the proposed site. The evaluation criteria consists of shape of the site, accessibility, noise level, utilities, security, visual quality, visibility, future development plan, demographic patterns, surrounding, and views. The site evaluation result is tabulated in Table 2. Each of the criterion is assigned with a weight factor to indicate the significantly of the criterion towards the project requirement in selecting the site location.



**Figure 4.** Site 1 [9]



**Figure 5.** Site 2 [10]

Based on the site evaluation result, Site 2 marks the highest score and been chosen as the site location. The strength of the selected site location is the view and proportion. The site is accessible from three main roads as shown in Figure 6. Also, this site has several opportunities such as near free parking area, lots of places and cafes around. The weakness of this site is far from residential area and less visitors from far regions. Regarding the climate analysis, Figure 7 demonstrates the selected site experience cool wind from northwest direction and hot dusty wind from southeast direction.



**Figure 6.** Site accessibility



**Figure 7.** Site climate analysis

**Table 2.** Site evaluation result

Site criteria	Weight factor	Site 1	Site 2
Shape/ proportion	5	10	8
Access/ traffic	10	5	10
Noise level	10	7	10
Utilities	7	8	8
Security/ safety	9	10	10
Image/ visual quality	9	9	9
Visibility	10	9	10
Future development plan	2	10	10
Demographic patterns	6	8	10
Surrounding	5	4	5
Views	10	10	10
<b>Total</b>		<b>90</b>	<b>100</b>

**ZONING AND PROJECT DESIGN**

Figure 8 and Figure 9 demonstrate the site zoning and stacking diagram of the project respectively. The parking area is located at the south area of the site, while the educational zone is located at the north area of the site in order to reduce the noise form the vehicles. Besides that, other zone such as administration, services and entertainment are located at the middle of the site, which is continece to serve for all users. In addition, the outdoor area is best located at the northwest due to cool wind and nice view. Some trees are planted at the south area in order to block the unwanted wind coming from the southeast, also reduce the sounds coming from the mosque.

Iqra, the first word revealed from Allah upon the Prophet Mohammed PBUH. Nowadays the new generation doesn't read as much because of the new technologies. The concept is to have a place that helps the new generation to read more. The lack of studying areas in Jeddah and the need of interaction between students that help them gain more knowledge and experience. Figure 10 and Figure 11 demonstrate the side view and the main perspective view respectively.



Figure 8. Site zoning



Figure 9. Stacking diagram

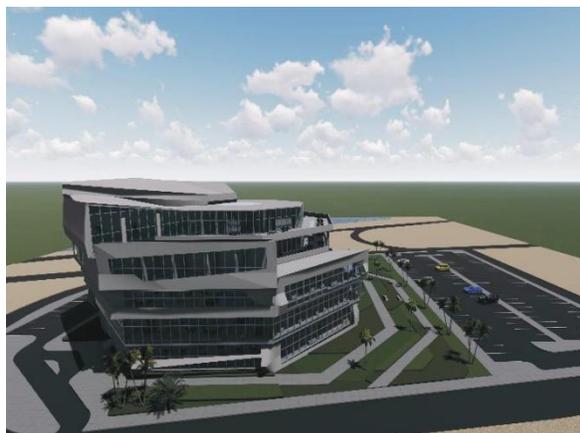


Figure 10. Side view



Figure 11. Main perspective view

### CONCLUSION

This project creates a new approach for students to work, study, exchange knowledge, and interact. The proposed project makes it a focal point to all students and citizens in general, by creating a place for students to go and work and interact in a fun and different way. The main elements that considered in the proposed space program are educational, entertainment, administrative, and services. The site evaluation was conducted and Al Shati District is selected based on several criteria such as shape of the site, accessibility, noise level, utilities, security, visual quality, visibility, future development plan, demographic patterns, surrounding, and views. The proposed interactive library expected to bring more benefits to the users for mental and social development. The library will be opened for long hours to help students to achieve and accomplish their work.

### REFERENCES

1. Philbin, M. M., Parker, C. M., Flaherty, M. G. and Hirsch, J. S. 2019. Public Libraries: A Community-Level Resource to Advance Population Health. *Journal of community health*, 44, 1, 192-199.
2. Trombetta, S. 2017. Why Libraries Are Essential, Now More Than Ever. [Internet]. Bustle. [cited 7 October 2019]. Available from: <https://www.bustle.com/p/7-reasons-libraries-are-essential-now-more-than-ever-43901>.
3. Gatz M. 2005. Educating the brain to avoid dementia: can mental exercise prevent Alzheimer disease?. *PLoS medicine*, 2, 1, 0038-0040.
4. Vago, D. R. and Zeidan, F. 2016. The brain on silent: mind wandering, mindful awareness, and states of mental tranquility. *Annals of the New York Academy of Sciences*, 1373, 1, 96-113.
5. Brouwer, J. and Jansen, E. 2019. Beyond grades: developing knowledge sharing in learning communities as a graduate attribute. *Higher Education Research & Development*, 38, 2, 219-234.
6. Library and Learning Centre University of Economics Vienna / Zaha Hadid Architects. 2014. [Internet]. ArchDaily. [cited 7 October 2019]. Available from: <https://www.archdaily.com/523598/library-and-learning-centre-university-of-economics-vienna-zaha-hadid-architects>.
7. Surrey City Centre Library / Bing Thom Architects. 2016. [Internet]. ArchDaily. [cited 7 October 2019]. Available from: <https://www.archdaily.com/789073/surrey-city-centre-library-bing-thom-architects>.
8. Tianjin Binhai Library / MVRDV + Tianjin Urban Planning and Design Institute. 2017. [Internet]. ArchDaily. [cited 7 October 2019]. Available from: <https://www.archdaily.com/882819/tianjin-binhai-library-mvrdv-plus-tianjin-urban-planning-and-design-institute>.
9. 21°34'47.5"N 39°06'39.1"E. 2019. [Internet]. Google Maps.

- [cited 7 October 2019]. Available from:<https://www.google.com/maps/place/21%C2%B034'47.5%22N+39%C2%B006'39.1%22E/@21.5798632,39.1098811,309m/data=!3m2!1e3!4b1!4m14!1m7!3m6!1s0x0:0x0!2zMjHCsDM4JzU3LjgiTiAzOcKwMDYnMDkuNSJF!3b1!8m2!3d21.649396!4d39.102637!3m5!1s0x0:0x0!7e2!8m2!3d21.579861!4d39.1108565>.
10. 21°38'57.8"N 39°06'09.5"E. 2019. [Internet]. Google Maps. [cited 7 October 2019]. Available from:<https://www.google.com/maps/place/21%C2%B038'57.8%22N+39%C2%B006'09.5%22E/@21.649401,39.1004483,17z/data=!3m1!4b1!4m5!3m4!1s0x0:0x0!8m2!3d21.649396!4d39.102637>.