

TEENAGE PERCEPTION ON INTERIOR DESIGN OF PUBLIC LIBRARIES

NUR HANIS NAJWA BINTI ISMAIL

A thesis submitted in fulfilment of the
requirements for the award of the degree of
Master of Philosophy

Faculty of Built Environment and Surveying
Universiti Teknologi Malaysia

MARCH 2019

DEDICATION

Dedicated to;

My lovely ummi and abah,
Puan Rodiah Ismail and Encik Ismail Zakaria,
My siblings and lifelong friends,
Nadia, Majdi, Mun'im and Najihah,

for your never-ending love, du'as, support and trust.

Lecturers and researchers.

May Allah bless you.

ACKNOWLEDGEMENT

In the name of Allah, The Most Gracious and Most Merciful.

A special thanks and gratitude I would like to give to my main supervisor, Dr. Abdul Halim bin Hussein for his guidance, time, support and understanding as well as the valuable discussions that have introduced me to other views of doing research, and for helping me a lot during my times of confusion until I finished my writing. I would also like to thank Assoc. Prof. Dr. Mahmud bin Mohd Jusan, Dr. Roshida binti Abdul Majid and Assoc. Prof. Dr. Khairul Anwar bin Mohamed Khaidzir for their time and consultation on the research area. Without their assistance and help, I would not have finished this research successfully.

Special thanks to the group of young teens who were willing to spend their precious time answering the online questionnaire and participating in a short interview with me. Their cooperation is highly appreciated. Thank you for helping me to help you all to improve our public library design in the future for a better learning environment. May this piece of research help a bit in contributing to our design field.

Last but not least, thank you very much to both my pillars of strength, my mother, Puan Rodiah binti Ismail and my father, Encik Ismail bin Zakaria who have been supporting me and believing in me without fail in completing this thesis either physically, spiritually, financially and throughout their du'as. They mean a lot to me. To my siblings; Nadia, Majdi, Mun'im and Najihah, thank you for always being there with me through the ups and downs. Thank you for accompanying me while writing this thesis. Without your help and support, I would not have had the happy times in between completing this thesis.

Thank you. May Allah bless.

ABSTRACT

In a world where technology has taken over our daily activities, the public library is still the place for the community of all ages to look for books and references for formal or informal studies. Public libraries are one of the successful spaces designed for people of all ages as they encourage visitors to behave and interact positively in the environment. Thus, teenagers as library users who are at the verge of becoming adults, need a more positive environment around them to observe and learn. However, only a few studies on public libraries and teenage visitors have been conducted. One of the issues is the lack of space designed specifically for teenagers, and the too formal ambience for the group in the public library. The study determined the physical characteristics of interior design in public libraries that would significantly affect teenage behaviour by identifying their design preferences and perceptions. The research utilized a mixed method of quantitative and qualitative data collection to identify the interior design characteristics of public libraries in Malaysia that affect teenage behaviour. Case studies were conducted on three public libraries in Selangor. Data on the characteristics were collected through observation, photographs and annotated sketches. Next, to verify teenage perception and preferences on the interior design characteristics of public libraries, online questionnaire survey forms were forwarded to teenage online groups using the snowball technique. 70 respondents answered the survey within the time allocated. In addition, semi structured interviews were conducted on 13 teenage visitors of public libraries through random sampling to further investigate their perceptions and preferences of public library interior design. Finally, the third objective is to determine the relationship between interior design characteristics of public libraries in Malaysia and teenage behaviour, and the data for the analysis were from the triangulation of the collected data. Statistical methods were used to analyse quantitative data while qualitative data were analysed through content analysis by systematically evaluating the texts and answers in a table form. The main output of the research showed that all the characteristics listed, namely bright colours, natural day lighting, informal and interactive furniture arrangement and furnishings are imperative in designing a better public library for a better learning environment for teenagers as agreed by the respondents. The findings contribute to the possibility of future studies on the interior design of public libraries for teenagers specifically in Malaysia. Hence, this research hopefully provides insights on the needs of teenagers with regard to space in public libraries. This enables architects and expert designers to strike a clearer balance between creating functional and inspiring buildings with exciting architectural features and enjoyable internal design spaces for teenagers as well as users of all ages.

ABSTRAK

Di dunia di mana teknologi telah mengambil alih aktiviti harian kita, perpustakaan awam masih menjadi tempat bagi masyarakat pelbagai peringkat umur untuk mencari buku dan rujukan bagi kajian formal atau tidak formal. Perpustakaan awam adalah salah satu ruang yang berjaya direka untuk orang ramai dari semua peringkat umur kerana ia menggalakkan pengunjung untuk berkelakuan dan berinteraksi secara positif dalam persekitaran ini. Oleh itu, remaja sebagai pengguna perpustakaan yang hampir menjadi dewasa, memerlukan persekitaran yang lebih positif di sekeliling mereka untuk diperhatikan dan belajar. Walau bagaimanapun, hanya beberapa kajian mengenai perpustakaan awam dan pengguna dari golongan remaja telah dijalankan. Salah satu dari isu-isunya adalah kekurangan ruang yang direka khusus untuk remaja, dan suasana yang terlalu formal untuk golongan ini di perpustakaan awam. Kajian ini menentukan ciri-ciri fizikal reka bentuk dalaman di perpustakaan awam yang akan memberi kesan ketara terhadap tingkah laku remaja dengan mengenal pasti persepsi dan pemilihan reka bentuk yang istimewa bagi mereka. Penyelidikan ini menggunakan kaedah campuran kuantitatif dan kualitatif untuk mengenal pasti ciri-ciri reka bentuk dalaman perpustakaan awam di Malaysia yang mempengaruhi kelakuan remaja. Kajian kes telah dijalankan di tiga perpustakaan awam di Selangor. Data mengenai ciri-ciri tersebut telah dikumpulkan melalui pemerhatian, gambar dan lakaran beranotasi. Seterusnya untuk mengesahkan persepsi remaja dan keutamaan mengenai ciri reka bentuk dalaman perpustakaan awam, borang kaji dan soal selidik dalam talian telah diedarkan kepada kumpulan remaja dalam talian menggunakan teknik *bola salji*. 70 responden menjawab kajian dalam masa yang diperuntukkan. Di samping itu, wawancara separa tersusun telah dijalankan dalam kalangan 13 pelawat remaja perpustakaan awam melalui persampelan secara rawak untuk mengkaji lebih mendalam tentang persepsi dan keutamaan mereka dalam reka bentuk dalaman perpustakaan awam. Akhirnya, objektif ketiga adalah untuk menentukan hubungan antara ciri-ciri reka bentuk dalaman perpustakaan awam di Malaysia dan tingkah laku remaja, dan data untuk analisis adalah dari triangulasi data yang dikumpulkan. Kaedah statistik digunakan untuk menganalisis data kuantitatif manakala data kualitatif dianalisis melalui analisis kandungan dengan menilai secara sistematik teks dan jawapan dalam jadual. Hasil utama penyelidikan menunjukkan bahawa semua ciri-ciri yang disenaraikan, iaitu warna yang terang, pencahayaan semula jadi, susunan perabot tidak formal dan interaktif adalah penting dalam reka bentuk dalaman perpustakaan awam untuk persekitaran pembelajaran yang lebih baik untuk remaja seperti yang dipersetujui oleh responden. Dapatan ini menyumbang kepada kemungkinan kajian masa depan mengenai reka bentuk dalaman perpustakaan awam untuk remaja khususnya di Malaysia. Dengan itu, kajian ini sememangnya memberi pandangan mengenai keperluan remaja berkenaan dengan ruang perpustakaan awam. Ini membolehkan arkitek dan pereka yang pakar untuk mewujudkan keseimbangan yang lebih jelas antara mewujudkan bangunan yang berfungsi dan inspirasi dengan ciri seni bina menarik, dan ruang reka bentuk dalaman yang menyeronokkan untuk remaja serta pengguna dari semua peringkat umur.

TABLE OF CONTENTS

| | TITLE | PAGE |
|------------------|---------------------------------|--------------|
| | DECLARATION | ii |
| | DEDICATION | iii |
| | ACKNOWLEDGEMENT | ivv |
| | ABSTRACT | v |
| | ABSTRAK | vi |
| | TABLE OF CONTENTS | vii |
| | LIST OF TABLES | xii |
| | LIST OF FIGURES | xiv |
| | LIST OF APPENDICES | xviii |
| CHAPTER 1 | INTRODUCTION | 1 |
| 1.1 | Introduction | 1 |
| 1.2 | Background of Study | 1 |
| 1.3 | Statement of the problem | 3 |
| 1.4 | Research Gap | 4 |
| 1.5 | Research Aim | 6 |
| 1.6 | Research Questions | 6 |
| 1.7 | Research Objectives | 7 |
| 1.8 | Research Framework | 7 |
| 1.9 | Scope of Research | 8 |
| 1.10 | Significance of Study | 10 |
| 1.11 | Expected Research Outcome | 11 |
| 1.12 | Thesis Structure | 12 |
| CHAPTER 2 | LITERATURE REVIEW | 15 |
| 2.1 | Introduction | 15 |
| 2.2 | Interior Design in Architecture | 16 |

| | | |
|---------|--|----|
| 2.2.1 | Current Issues Regarding Interior Design | 18 |
| 2.2.2 | Characteristics of Good Interior Design | 19 |
| 2.2.2.1 | Colour | 19 |
| 2.2.2.2 | Lighting | 20 |
| 2.2.2.3 | Space Layout | 22 |
| 2.2.2.4 | Wayfinding | 23 |
| 2.3 | Public Library | 24 |
| 2.3.1 | Public Library as Public Space | 25 |
| 2.3.1.1 | Characteristics of Good Public Spaces | 26 |
| 2.3.1.2 | Benefits of Public Spaces | 27 |
| 2.3.2 | Public Library Definition | 27 |
| 2.3.3 | Characteristics of Public Library | 29 |
| 2.3.4 | Public Library Design Issues | 33 |
| 2.3.5 | Public Library Design Rules | 34 |
| 2.3.6 | Interior Design for Users | 36 |
| 2.4 | Understanding Teenage Behaviour | 37 |
| 2.4.1 | Categories and Types of Human Behaviour | 37 |
| 2.4.2 | Factors in Determining Behaviour | 39 |
| 2.4.3 | Factors Influencing Teenage Behaviour | 41 |
| 2.5 | Learning Space for Teenagers | 41 |
| 2.5.1 | Public Library as Good Learning Space for Teenagers | 43 |
| 2.6 | Teenage Perception and Preferences on Public Library Interior Design | 45 |
| 2.7 | Good Public Library Design for Teens | 46 |
| 2.7.1 | Precedent Study 1: New York Public Library (NYPL) | 49 |
| 2.7.2 | Precedent Study 2: Library in Luckenwalde, Luckenwalde, Germany | 52 |

| | | | |
|------------------|-------|---|-----------|
| | 2.7.3 | Precedent Study 3: Hjorring Central Library | 56 |
| 2.8 | | Conclusion | 59 |
| CHAPTER 3 | | RESEARCH METHODOLOGY | 61 |
| 3.1 | | Introduction | 61 |
| 3.2 | | Analytical Review of Literatures | 62 |
| 3.3 | | Type of Research: Post Occupancy Evaluation (POE) | 64 |
| 3.4 | | Research Methods | 64 |
| | 3.4.1 | Qualitative Design | 65 |
| | 3.4.2 | Quantitative Design | 65 |
| 3.5 | | Research Approach | 65 |
| | 3.5.1 | Verbal Approach (Interview) | 65 |
| | 3.5.2 | Observational Approach | 66 |
| | 3.5.3 | Visual and Textual Approach | 67 |
| | 3.5.4 | Survey Approach | 67 |
| 3.6 | | Selection of Case Studies | 68 |
| 3.7 | | Pilot Study Analysis | 70 |
| | 3.7.1 | Initial Observation | 71 |
| | 3.7.2 | Modification to Methodology and Approaches | 72 |
| 3.8 | | Sampling Method | 72 |
| 3.9 | | Direct Observation | 73 |
| 3.10 | | Online Questionnaire Survey Form | 74 |
| 3.11 | | Data Collection | 76 |
| 3.12 | | Data Triangulation | 76 |
| 3.13 | | Research Design | 77 |
| CHAPTER 4 | | CASE STUDIES | 79 |
| 4.1 | | Introduction | 79 |
| 4.2 | | Case Study 1: Perpustakaan Awam Raja Tun Uda, Shah Alam | 85 |
| | 4.2.1 | Space and Zoning | 86 |
| | 4.2.2 | Spatial Design Characteristics | 87 |

| | | |
|-------------------|---|-------------|
| 4.3 | Case Study 2: Perpustakaan Awam Kajang | 93 |
| 4.3.1 | Space and Zoning | 94 |
| 4.3.2 | Spatial Design Characteristics | 95 |
| 4.4 | Case Study 3: Perpustakaan Awam Bangi | 99 |
| 4.4.1 | Space and Zoning | 101 |
| 4.4.2 | Spatial Design Characteristics | 103 |
| 4.5 | Summary and Conclusion | 109 |
| CHAPTER 5 | RESULTS AND FINDINGS | 111 |
| 5.1 | Introduction | 111 |
| 5.2 | Description Analysis on General Information | 112 |
| 5.2.1 | Freuency of Visit | 113 |
| 5.2.2 | Teenage Visiting Hours | 114 |
| 5.2.3 | Reasons of Visit | 116 |
| 5.2.4 | Wayfinding | 117 |
| 5.3 | Objective 2: Teenage Perception on Interior Design Characteristics of Public Library | 118 |
| 5.3.1 | Space Layout | 118 |
| 5.3.2 | Colour | 119 |
| 5.3.3 | Opening and Lighting | 122 |
| 5.3.4 | Furniture Arrangement | 124 |
| 5.3.5 | Furnishing | 125 |
| 5.4 | Objective 3: Synthesis and Discussion on Interactions between Interior Design Characteristics of Public Library and Teenagers | 127 |
| CHAPTER 6 | CONCLUSION | 135 |
| 6.1 | Introduction | 135 |
| 6.2 | Significance of Research Findings | 135 |
| 6.3 | Implications and Limitations | 137 |
| 6.4 | Recommendation and Future Directions | 138 |
| REFERENCES | | 1141 |
| APPENDICES | | 151 |

| | |
|------------|-----|
| Appendix A | 151 |
| Appendix B | 152 |
| Appendix C | 154 |
| Appendix D | 156 |

LIST OF TABLES

| TABLE NO. | TITLE | PAGE |
|------------------|--|-------------|
| Table 1.1 | Studies on public library design and teenagers. | 4 |
| Table 1.2 | Research objectives, methods and instruments to analyse. | 9 |
| Table 2.1 | Comparison of old and new approaches of physical interior of library. (Source: Sufar et al, 2012) | 30 |
| Table 2.2 | Study stage of teenagers in Malaysia | 45 |
| Table 2.3 | Interior design characteristics of public library that are significant based on each designer | 48 |
| Table 3.1 | Other research method employed | 63 |
| Table 3.2 | Criteria of the chosen public libraries | 70 |
| Table 3.3 | The parameter of studying the relationship between interior design of public library and teenage behaviour | 75 |
| Table 3.4 | Summary of data collection methods, instruments and their units | 76 |
| Table 3.5 | Basic types of triangulation (Denzin, 1987) | 77 |
| Table 4.1 | Profile summary of case studies | 81 |
| Table 4.2 | Profile summary on interior design characteristics of case studies | 83 |
| Table 4.3 | Summary of general criteria in Perpustakaan RATU | 86 |
| Table 4.4 | Interior design characteristics of Perpustakaan RATU | 93 |
| Table 4.5 | Summary of general criteria of Perpustakaan Kajang | 94 |
| Table 4.6 | Interior design characteristics of Perpustakaan Kajang | 99 |
| Table 4.7 | Summary of general criteria of Perpustakaan Bangi | 100 |
| Table 4.8 | Interior design characteristics of Perpustakaan Bangi | 108 |
| Table 5.1 | Teenage perception on space layout of public library | 119 |
| Table 5.2 | Teenage preferences on library room colour | 122 |
| Table 5.3 | Teenage satisfactory level on lighting inside the library | 123 |
| Table 5.4 | Teenage satisfactory level on furniture arrangement inside the library | 124 |

| | | |
|-----------|---|-----|
| Table 5.5 | Teenage choices on interior design characteristics of public library that appeal to them most based on interview. | 128 |
| Table 5.6 | Opinions of interviewees on interior design characteristics of public library and teenage behaviour output | 133 |

LIST OF FIGURES

| FIGURE NO. | TITLE | PAGE |
|-------------------|---|-------------|
| Figure 1.1 | Research procedure. | 8 |
| Figure 1.2 | The relationship between interior design characteristics of public library and teenage behaviour | 11 |
| Figure 1.3 | Structure of thesis | 13 |
| Figure 2.1 | Summary of literature review studies | 16 |
| Figure 2.2 | Recommended light levels for different types of work spaces | 22 |
| Figure 2.3 | Old public library design. (Source: https://farm4.staticflickr.com/3410/3411964660_8a7a0bf2a3_z.jpg) | 31 |
| Figure 2.4 | Current public library design. (Source: http://bcilibraries.com/wordpress/wp-content/uploads/0004__0001_Modern-Library-Design.jpg) | 31 |
| Figure 2.5 | Key positive features of physical library space. (Source: UQ Libraries) | 35 |
| Figure 2.6 | Understanding the effects of the physical environment and its relation in producing a better interior design ambience. (Source: Sufar et al, 2012) | 36 |
| Figure 2.7 | Factors influencing productivity. (Source: Saaty, 1972) | 39 |
| Figure 2.8 | Reading area in Bud Werner Memorial Library. (Source: www.a-p.com) | 47 |
| Figure 2.9 | Reading area for teens. (Source: www.citylab.com) | 49 |
| Figure 2.10 | Space to play games or informal activities. (Source: www.citylab.com) | 50 |
| Figure 2.11 | Reading area separated from games area with noise filter glass wall. (Source: www.citylab.com) | 50 |
| Figure 2.12 | Snack+Chat Niche. (Source: www.citylab.com) | 51 |
| Figure 2.13 | Snack+Chat Niche besides the exam prep area. (Source: www.citylab.com) | 51 |
| Figure 2.14 | Lobby of the library. (Source: http://www.lammhultsbiblioteksdesign.com) | 52 |

| | | |
|-------------|--|----|
| Figure 2.15 | Reading area. (Source: https://www.dezeen.com/2009/05/14/luckenwalde-town-library-by-arge-wff/) | 53 |
| Figure 2.16 | Staircase leads to book access. (Source: http://www.lammhultsbiblioteksdesign.com) | 53 |
| Figure 2.17 | Children reading and play area. (Source: https://www.dezeen.com/2009/05/14/luckenwalde-town-library-by-arge-wff/) | 54 |
| Figure 2.18 | Youth reading area. (Source: http://www.lammhultsbiblioteksdesign.com) | 54 |
| Figure 2.19 | Mini pantry and multimedia area. (Source: http://www.lammhultsbiblioteksdesign.com) | 55 |
| Figure 2.20 | Audio visual media area. (Source: http://www.lammhultsbiblioteksdesign.com) | 55 |
| Figure 2.21 | The main entrance of the library. (Source: arch2o) | 56 |
| Figure 2.22 | Shelving layout in reading area (Source: arch2o) | 57 |
| Figure 2.23 | Leisure reading area. (Source: arch2o) | 57 |
| Figure 2.24 | Children play and reading area. (Source: arch2o) | 58 |
| Figure 2.25 | Reading area for young teens. (Source: arch2o) | 58 |
| Figure 3.1 | Key plan indicating studied country. (Source: pinterest) | 68 |
| Figure 3.2 | Location plan of chosen public libraries in Selangor. (Source: Google map) | 69 |
| Figure 3.3 | Research design | 78 |
| Figure 4.1 | Perpustakaan Awam Raja Tun Uda (A) | 79 |
| Figure 4.2 | Perpustakaan Awam Kajang (B) | 80 |
| Figure 4.3 | Perpustakaan Awam Bangi (C) | 80 |
| Figure 4.4 | Types of books resources provided for visitors | 85 |
| Figure 4.5 | Floor plan of Perpustakaan Ratu (not to scale) | 87 |
| Figure 4.6 | Overall view inside the library | 88 |
| Figure 4.7 | Different floor colour reflected by light to the white ceiling on each floor | 88 |
| Figure 4.8 | Open reading area | 89 |
| Figure 4.9 | Enclosed reading area | 89 |
| Figure 4.10 | Discussion area | 90 |

| | | |
|-------------|--|-----|
| Figure 4.11 | Self-reading area | 90 |
| Figure 4.12 | Full length window viewing the lake and garden | 91 |
| Figure 4.13 | Users prefer to sit near the window with adjustable blinds | 91 |
| Figure 4.14 | Informative wall | 92 |
| Figure 4.15 | Light reading space | 92 |
| Figure 4.16 | Floor plan of Perpustakaan Kajang in not to scale. | 95 |
| Figure 4.17 | Reading area | 96 |
| Figure 4.18 | Reading and discussion area | 96 |
| Figure 4.19 | Individual seating area facing the wall | 97 |
| Figure 4.20 | Openings to capture full natural lighting and view | 97 |
| Figure 4.21 | Openings with view of school field | 98 |
| Figure 4.22 | Seating and flooring material | 98 |
| Figure 4.23 | Entrance to Perpustakaan Bangi | 100 |
| Figure 4.24 | View from circulation counter | 101 |
| Figure 4.25 | Leisure reading area on ground floor | 100 |
| Figure 4.26 | Stairs towards the adult zone on first floor | 102 |
| Figure 4.27 | Floor plan of Perpustakaan Bangi in not to scale. | 103 |
| Figure 4.28 | General reading area | 104 |
| Figure 4.29 | Discussion area | 104 |
| Figure 4.30 | Individual reading area | 104 |
| Figure 4.31 | Both sides receive good natural lighting from the openings | 105 |
| Figure 4.32 | Reading area receive adequate natural lighting | 105 |
| Figure 4.33 | View of Tasik Cempaka | 106 |
| Figure 4.34 | Reading area that is facing Tasik Cempaka | 106 |
| Figure 4.35 | Shelving layout inside the area | 107 |
| Figure 4.36 | Users seen to sit near the windows | 107 |
| Figure 4.37 | Individual reading area at the corner of the room | 108 |
| Figure 4.38 | Space for discussion or light reading | 108 |
| Figure 5.1 | Items and variables analysed | 112 |

| | | |
|-------------|--|-----|
| Figure 5.2 | Respondents' accompany during visit | 113 |
| Figure 5.3 | Teenage frequency of visit to public library | 114 |
| Figure 5.4 | Teenage visiting hours | 115 |
| Figure 5.5 | Duration of time visiting the library | 116 |
| Figure 5.6 | Reasons of teenage visiting public library | 116 |
| Figure 5.7 | Teenage wayfinding inside public library | 117 |
| Figure 5.8 | Teenage perception on wall colour inside the library | 120 |
| Figure 5.9 | Effectiveness of public library colour scheme on teenage mood and feelings | 120 |
| Figure 5.10 | Teenage satisfactory level of furniture colour | 121 |
| Figure 5.11 | Teenage who prefers to sit near windows | 123 |
| Figure 5.12 | Teenage level of comfort of furniture (tables and chairs) material | 126 |
| Figure 5.13 | Teenage satisfaction level of flooring material | 126 |
| Figure 5.14 | Teenage opinion on whether interior design characteristics of public library do affect their behaviour | 127 |
| Figure 5.15 | Bright and happy colours suggestion for furniture. (Source: ShcemeColour.com) | 129 |
| Figure 5.16 | Openings and lighting can improve mood (Source: australianinteriordesignawards.com) | 130 |
| Figure 5.17 | Different choices of seating for different tasks. (Source: Boston Public Library) | 131 |
| Figure 5.18 | Informal furniture arrangement (Source: borackabn.com) | 131 |
| Figure 5.19 | Soft chairs material for users' comfort. (Source: curbed.com) | 132 |
| Figure 5.20 | Variety of seating with different furnishing for teens space. (Source: https://www.scarboroughlibrary.org) | 132 |

LIST OF APPENDICES

| APPENDIX | TITLE | PAGE |
|-----------------|---------------------------------|-------------|
| Appendix A | Case Study Evaluation Checklist | 151 |
| Appendix B | Online Questionnaire Survey | 152 |
| Appendix C | Example of Field Logs | 154 |
| Appendix D | Interview Transcripts | 156 |

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter looks into the background of study, statement of the problem, research gap, research aim, research questions and research objectives. Research framework is presented in a diagram as a guide for this research. Other than that, a brief introduction on the methods and instruments used in this research is also stated in this chapter. Last but not least, the significance of research; expected research outcome and overall thesis structure are summarized as an introduction to this whole research.

1.2 Background of Study

Architecture and human behaviour are two major elements that help in shaping the community including the physical, social, cultural and environments. Buildings and spaces are some of the major elements that influence human behaviour and interactions between one another where it can also affect mood, health and safety. So far, a large number of studies and research have been made on the interface between architecture and human behaviour as a whole (Gary T. Moore, 1979), such as study on architecture shaping human behaviour by Mats Lieberg (1995), David Harrison and Neville A. Stanton (2000), Dan Lockton (2011) and Erin Morgan (2012).

The Salk Institute neuroscientist who discovered neurogenesis in the early 1990s, Fred Rusty Gage said in his AIA Convention keynote address:

“As neuroscientists, we believed that the brain is the organ that controls behaviour, that genes control the blueprint, the design, and structure of the brain, but the environment can modulate the function of genes, and

ultimately the structure of our brain. Changes in environment change the brain and therefore they change our behaviour. Architectural design changes our brain and behavior.”

(Fred Rusty Gage, 2003)

Nowadays, public spaces allocated for teenagers that can create social interaction have decreased along with the development of cities (Day and Wagner 2010, Madanipour 2010). Although teenagers can appear to be less tolerated in public spaces, a good public space or buildings with good interior design characteristics can help them behave accordingly with each other (Vivoni 2013). Juhnevica & Udre (2010) stated that the needs of users, interior space planning and physical interior environment design should be at the centre of the planning process, not only by looking at the exterior of the building.

Public libraries, as a part of public spaces give free services to early literacy and are accessible to all ages from children to adults (Richard, 2010). The public library is specifically chosen because it is an example of a successful space design for teens (Loh Chin Ee, 2016). Teenagers aged between 17 and 20 begin to formulate their own opinion and need positive interaction with adults (Tracy Logan, 2013). It can be seen that the public library is an important building for the future as it is a place for knowledge acquisition, communication and interaction between users of all ages. In an interview done by Amy Frearson, Francine Houben (2013) agreed with this statement that the public library is the most important building for everyone.

Architecture and interiors of libraries have changed across time. New forms, colours and concepts are employed in recent projects and interior solutions in different libraries all around the world (Sufar et al, 2012). Moreover, Latimer (2007) points out that "user space needs to be well planned, welcoming and attractive as the role of the physical library and the needs of users change in the 21st century". These days, library designs are too formal and youths are not that attracted to go to the library for their further learning outside school or college. Concern on this problem between spatial design and learning behaviour of teenagers also suggest the use of design thinking to help the educators in a more effective learning environment. (Loh Chin Ee, 2016).

However, only a few of the smaller scope of research focusing on relationship between interior design characteristics of public library and teenage behaviour in Malaysia specifically, has been done. Shannon Bowman (2013) indicated that there are only a few available sources on the study of youth needs in planning and space design. They are poorly understood and under-researched. When it comes to the public library scenario in Malaysia, it is very different and far from the libraries in developed countries. This includes the interior design quality, comfort and satisfaction level, user experience and the characteristics of the physical design of the interior environment (Sufar et al, 2012).

Therefore, this study aims to determine the characteristics of interior design in public libraries in Malaysia that influence and affect the behaviour of most teenagers in learning environments. This study is expected to uncover and obtain a clearer view of the issues concerning the problem statement by looking at teenage preferences, needs and perception on public library interior design. The importance and interest of the study is to show that such issues as interior design can be important in creating appropriate and friendly places for library users especially teenagers.

1.3 Statement of the Problem

Teenagers are a group of young people who are at the age of entering a new phase of life towards adulthood. This is the period of time when not only are their bodies being developed, but also their cognitive thinking, mood, action and behaviour. Teenage behaviour is affected by several factors, such as the surroundings, family, friends as well as places they go to. Therefore, it is important to identify settings that influence their activity behaviours positively, for a better public library design in the future by looking at their perceptions, preferences and experiences. It is also desirable to understand more on their needs and expectations in regards to the public library design to improve their learning environment.

1.4 Research Gap

The research gap for this thesis is based on the assessment of current and past researches done on teens and public libraries. The researches that are studied are then analyzed and compiled into their respective fields of focus to find out what should be revised in the future and anything that has not been covered yet. The research gap is the focus of study for this research which is on the interior design characteristics of public libraries in Selangor that affect teenage behaviour. Previous studies done can be referred to in Table 1.1 below:

Table 1.1 Studies on public library design and teenagers.

| Year | Author | Topic | Findings |
|-------------|--|---|---|
| 2010 | Sandra Feinberg, James R. Keller | Designing Space for Children and Teens in Libraries and Public Places. | 1) Space requirement for children and young adults. 2) Space design in public libraries for children and teens. |
| 2011 | Mohammad Moslemi Haghighi, Mahmud Mohd Jusan | Exploring Students Behaviour on Seating Arrangements in Learning Environment. | 1) Seating arrangement linking with school cultural context can produce a better classroom design based on students' performance. |
| 2012 | Suhaila Sufar, Anuar Talib, Haris Hambali | Towards a Better Design: Physical Interior Environments of Public Libraries in Peninsular Malaysia. | 1) Physical interior environments to be emphasized in providing a better library design: lighting, furniture, space planning, materials and finishes (colour). 2) Ambience, aesthetics and ergonomic factors affect users' emotion and mood. |
| 2013 | Marzena Siestrzewitowska | Public Spaces for The 21st Century Youth—Needs and Expectation. | 1) Public libraries as one of the public spaces needed for the youth. |

| | | | |
|-------------|-------------------------------------|---|---|
| | | | 2) Well designed space for various activities has significant effects on social behaviour of youth. |
| 2013 | Vivian Howard | What Do Young Teens Think about The Public Library? | 1) Overall teens attitude towards public library design and services through frequency of library use. 2) Staff, promotion and marketing and books collection. |
| 2014 | Hui Lin, Natalie Pang, Brendan Luyt | Is the Library a Third Place for Young People? | 1) Ambience of library creates conducive environment for young people to stay and study diligently as well as for entertainment (social, study and information). |

Based on the previous studies done on public library design and teenagers and analytical review on the literatures in chapter 2, the research gap is addressed. In the Malaysian context, teenagers aged between 17 and 21 years old are at the period of entering university after graduating from high school at the age of 17. They started to study for Sijil Pelajaran Malaysia (SPM), entering matriculation or foundation studies and to degree studies at 20 years old whom require broader assignment materials from public libraries. Thus, this study focuses on teenagers in this age group specifically since they are at the age when they encounter independent study at university, different from the learning environment at school. Therefore, public libraries are a good place for them to experience this new learning environment while engaging themselves with the society, different than in university libraries where they only meet with the same age of group most of the times.

1.5 Research Aim

The aim of this research is to determine the physical characteristics of interior design in public libraries that significantly affect teenage behaviour to create a better learning space for teenagers in Malaysia.

1.6 Research Questions

Based on the issues mentioned, the following research questions on the relationship between interior design characteristics of the public library and teenage behaviour will be addressed:

- (a) What are the interior design characteristics that affect teenagers most?
- (b) What are the teenagers' perceptions on interior design characteristics in public libraries?
- (c) How do teenagers behave in public libraries with different interior designs?
- (d) What is the relationship between interior design characteristics of public libraries and teenage learning behaviour?

These questions entail three research areas to be identified; (1) interior design characteristics of public libraries by conducting observations in case studies and by referring to previous studies on similar areas; (2) teenagers' preference on the interior design characteristics in relation to their learning behaviour in selected public libraries in three chosen new towns in Selangor which is Kajang and Bangi, and Shah Alam, and; (3) the relationship between interior design characteristics of public libraries and teenage behaviour by applying appropriate research methods which is data triangulation from the data collected that can link them.

1.7 Research Objectives

Thus, three research objectives are constructed to achieve the research aim:

- i. To identify the interior design characteristics of public libraries in Malaysia that affect teenage behaviour.
- ii. To verify teenage perception and preferences on interior design characteristics of public libraries in Malaysia.
- iii. To determine the relationship between interior design characteristics of public libraries and teenage behaviour.

1.8 Research Framework

The research framework for this study acts as a tool to guide the researcher in accomplishing this study. The framework includes stages from the very beginning to the very end of the study which are the aim and objectives, research methodologies, case studies, findings and analysis, and conclusions. The framework further demonstrates the aim of the research which is to determine the physical characteristics of the interior design in public libraries that significantly affect teenage behaviour to create better learning spaces for teenagers in Malaysia. The research procedure for this study is illustrated in Figure 1.1:

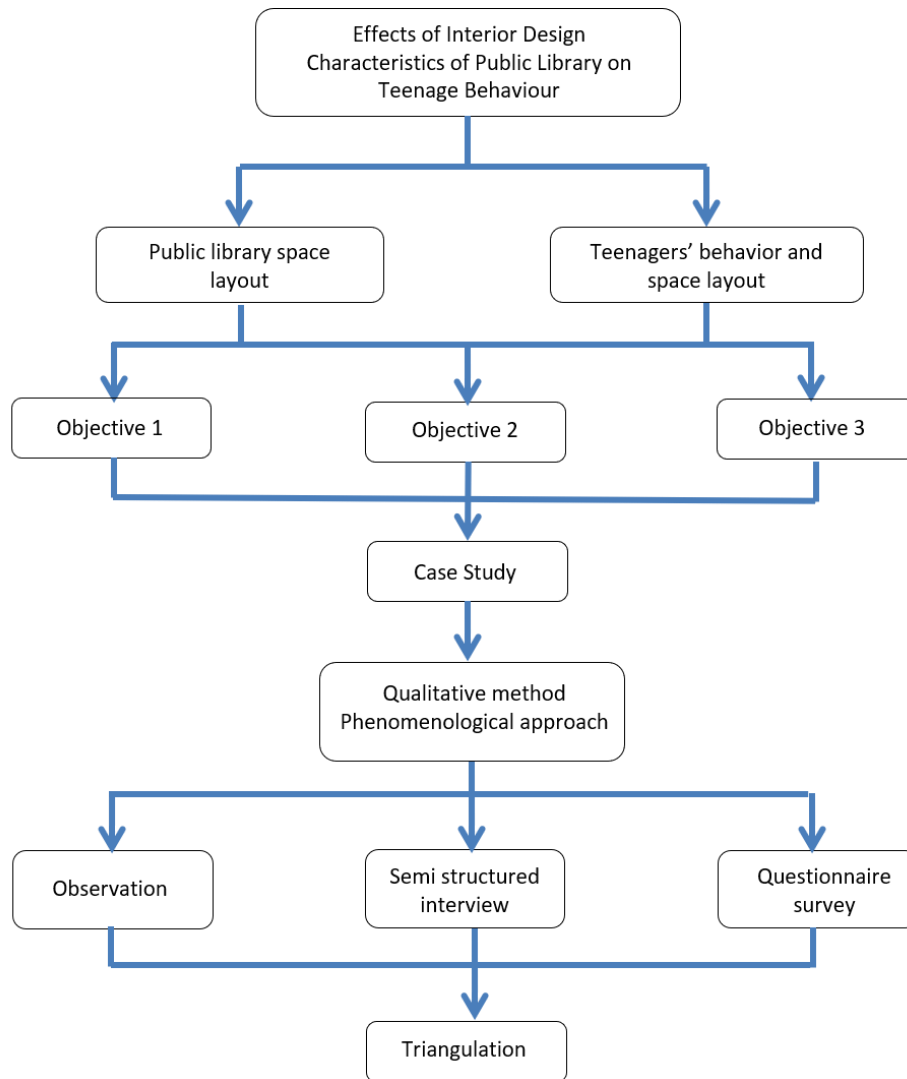


Figure 1.1 Research procedure.

1.9 Scope of Research

This research is focusing on how teenagers behave according to each space and their perception on the interior design characteristics of each public library chosen in Selangor through their experience and perspective. The interior design characteristics of public libraries refer to the colour, layout, seating arrangement, materials and lighting (Morley, 2013; Houben, 2013). Their perception and preferences on interior design characteristics of public libraries that affect their behaviour is addressed and understood further through a phenomenological approach by using qualitative methods.

The targeted users for this research are older teenagers aged between 17 and 21 because they are at the age that marks the transition into adulthood (Karen B. Owen, 2002) who begin to formulate their own opinions and are in need of positive interaction with adults (Tracy Logan, 2013). Therefore, at this age, the space that can affect them positively, that is the public library needs to be taken into consideration in order to improve their learning environment and experience as a preparation from school students to university students that require more independent studies. Moreover, the public library is said to be the best example of a successful space design for teens (Loh Chin Ee, 2016).

Table 1.2 Research objectives, methods and instruments to analyse.

Aim: to determine the physical characteristics of interior design in public libraries that significantly affect teenage behaviour to create a better learning space for teenagers in Malaysia.

| Research Objectives | Methods | Instrument |
|---|---|--|
| RO 1: To identify the interior design characteristics of public library in Malaysia that affect teenage behaviour. | <ul style="list-style-type: none"> • Observation through case studies | <ul style="list-style-type: none"> • Camera • Fieldwork journal • Logbook |
| RO 2: To verify how the interior design characteristics of public library in Malaysia affect teenage behaviour. | <ul style="list-style-type: none"> • Semi-structured interview • Questionnaire survey | <ul style="list-style-type: none"> • Online questionnaire survey form |
| RO 3: To determine the relationship between interior design characteristics of public library and teenage behaviour. | <ul style="list-style-type: none"> • Data triangulation | <ul style="list-style-type: none"> • Content analysis |

The research is conducted at public libraries located in three new towns in Selangor, Malaysia. The public library, as a part of public spaces (Siestrzewitowska, 2013) is specifically chosen since it is a place that can affect the teenagers positively.

It is also a place that is accessible to all (Tracy Logan, 2013). These will help to improve the learning and education environment for teenagers as well as create awareness for users and designers in designing a public library that can cater to their needs and comfort especially in relation to the interior design characteristics that affect their behaviour most.

The public library chosen will have similar characteristics in terms of their location, which is near the schools and housing areas and is easily accessible for all ages especially teenagers. The other characteristic is the facility of the library itself that provides reading areas for all ages. The characteristics of interior designs of public library in Selangor can also be compared thoroughly to be applied to other public libraries in future for teenagers' use. However, the effectiveness and functionality of the interior design in existing public library are yet to be observed and analysed thoroughly.

1.10 Significance of the Study

The study adds to the knowledge on teenagers' sensibilities to the physical characteristics of interior design in public libraries that they experience in the learning environment. The study exposed that sensibility to physical characteristics of interior design is one of the factors that should be understood by designers and researchers when discussing public libraries for teenagers' use in order to encourage positive behaviour. The interior design characteristics of public libraries around them that can be seen, touched and felt such as colour, lighting, texture and furniture arrangement will affect their behaviour in learning or interacting with each other.

Significantly, this study identifies that not only children and elderly need better designed public places, but also teenagers. This adds new knowledge of planning and designing the interior of public libraries by taking consideration of the colour scheme, openings for better views as well as the furniture arrangements since teenagers are at the age of exploring and experiencing new things before approaching adulthood.

Skilful architects and expert planners will strike a clearer balance between creating functional and inspiring buildings with exciting architectural features and enjoyable internal spaces for users.

1.11 Expected Research Outcome

This research is expected to study and identify the different types of interior design characteristics of public libraries in Selangor through case study that affect teenage behaviour, based on direct observation done. All characteristics listed, which are colour, lighting, seating arrangement and furnishing are imperative in designing a better public library for a better learning environment. In order to understand more on teenage behaviour, their perception and preferences on physical characteristics of interior design are studied through interviews and questionnaire survey form. The relationship between interior design characteristics of public library and teenage behaviour can be achieved through analysis and data triangulation by making a scoring system to determine the best public library with best interior design based on teenage preferences.

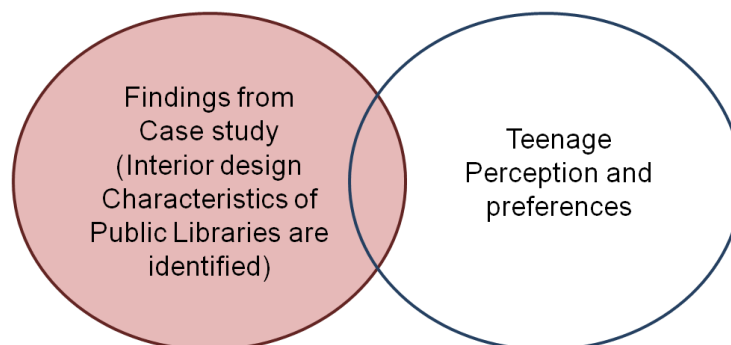


Figure 1.2 The relationship between interior design characteristics of public library and teenage behaviour.

1.12 Thesis Structure

This study will be divided into five chapters.

- (a) Chapter 1 acts as the introduction of the study and defines the research framework as a whole. It includes research questions, research aim and objectives, research gap, research framework, scope of research, its significance and expected research outcome.
- (b) Chapter 2 will then define the background study and literature reviews from books, articles, journals and internet sources done based on the topic chosen. The area of study includes the study on interior design characteristics of public library, teenager behaviour and public library design for teens. The literature review is analysed and summarized to gain further understanding on the subject matter.
- (c) Chapter 3 will further explain the research methodology taken to accomplish how the data are collected and how they are analyzed.
- (d) Chapter 4 discusses, describes and illustrates the case studies of three public libraries chosen.
- (e) Analysis and findings that are discovered in this study will be discussed in Chapter 5, as well as the conclusions of this research as a whole and whether or not the objectives have been achieved, the limitations discovered during the study and also whether this study can be further continued in the future.
- (f) The last chapter, Chapter 6 will conclude on the whole study with the discussion of the overall findings whether they answered the research objectives and research questions of this research including the implications as well as the relationship.

The structure of the thesis can be seen in the Figure 1.3.

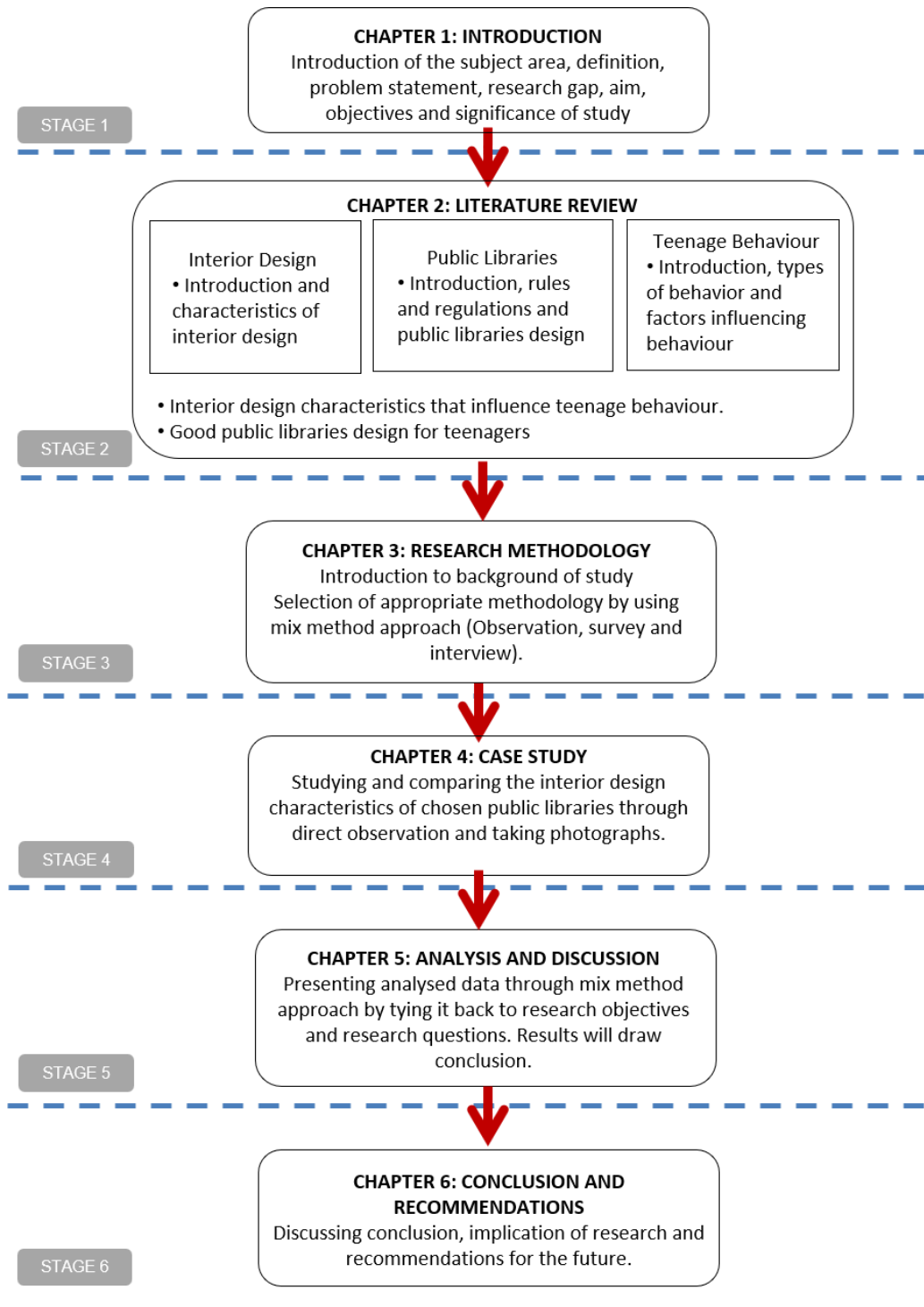


Figure 1.3 Structure of thesis.

REFERENCES

- Abbasi, N., Tucker, R., Fisher, K., Gerrity, R. (2014). *Library Spaces Designed with Students in Mind: an Evaluation Study of University of Queensland Libraries at St Lucia Campus*. Paper presented at the Proceedings of the IATUL Conferences, Paper 3. Retrieved from <https://docs.lib.purdue.edu/iatul/2014/librarianspace/3/>
- Ahmad, A. S. (2000). *A Quality Management Framework for Architectural Design Phase Best Practice. Architecture*. Doctor of Philosophy. Universiti Teknologi Malaysia, Skudai.
- Anandasivam, K., & Cheong, F. C. (2008). Designing a Creative Learning Environment: NTU's New Art, Design & Media Library. *The Electronic Library Oxford*, vol. 26, page 650.
- Bell, C. R. (2008). *The Role of the Interior Environment in the Perception of Service Quality: A Business Perspective*. Marymount University, Faculty of the School of Arts and Sciences, Arlington, VA.
- Bowman, S. (2013). *Urban Places for Youth. Community Planning*. Master of Community Planning. University of Cincinnati.
- Boyce, P. et al. (2003). The Benefits of Daylight through Windows Sponsored by : Capturing the Daylight Dividend Program The Benefits of Daylight through Windows, 1–88.
- Buchanan, D. A. (2001). The Role of Photography in Organization Research: A Reengineering Case Illustration. *Journal of Management Inquiry*, 10(2), 151-164.

- Burkhardt, J. (2017). Library Builds Learning Space for Teens. Retrieved from https://www.thedalleschronicle.com/community/library-builds-learning-space-for-teens/article_708afde6-e58d-5ac4-b5f2-20c95de35cba.html (12.3.19)
- Carl Walrond, 'Teenagers and youth - Defining teenagers as a group', Te Ara - the Encyclopedia of New Zealand, <http://www.TeAra.govt.nz/en/teenagers-and-youth/page-1> (accessed 11 October 2016).
- Charnofsky, L. (2012). *The Interrelationship Between Human Behavior and Sustainability in The Built Environment. Departmental Honors*. Kent State University Honors College.
- Clark, M. (2012). Becoming Public: Library Design And The Creation Of Public Space. *Dalhousie Journal of Interdisciplinary Management*, 8(2012), 1-13. <http://dx.doi.org/10.5931/djim.v8i1.220>
- Cohen, A., & Cohen, E. (1979). *Designing and space planning for libraries: A behavioral guide*. New York: R.R. Bowker Co.
- Crandon, G. (2015). The Top 5 Issues Affecting Interior Design Today. Retrieved from <http://inhabitat.com/the-top-5-issues-affecting-interior-design-today/> (25.5.2016).
- Creswell, J. (2010). *Research Design, Qualitative, Quantitative and Mixed Method Approach* (2nd ed.). Sage Pub.
- Curry, A., Schwaiger, U. (1999). The balance between anarchy and control: Planning library space for teenagers. *Feature. Vol. 19, Iss. 1, (1999): 9-12*.
- D'Angelo, E. (2006). *Barbarians at the gate of the public library: How postmodern consumer capitalism threatens democracy, civil education and the public good*. Duluth, MN: Library Juice Press.
- Dahlgren, A. C. (2009). *Public Library Space Needs: A Planning Outline / 2009*. South Webster Street, Madison: Wisconsin Department of Public Instruction.
- Day, R., Wagner, F. (2010). Parks, streets and 'just empty space': the local environmental experiences of children and young people in a Scottish

- study. *Local Environment: The International Journal of Justice and Sustainability* 15 (6), 509-523.
- Denzin N. (2006). *Sociological Methods: A Sourcebook*, Adeline Transaction, ISBN 978-0-202-30840-1, (5th Edition).
- Design Guide for Interiors. (1997), (September).
- Engineering ToolBox, (2004). *Illuminance - Recommended Light Level*. [online] Available at: https://www.engineeringtoolbox.com/light-level-rooms-d_708.html [Accessed 20 November 2018].
- Erickson, A. (2013, June 4). Designing Libraries That Encourage Teens to Loiter. Retrieved from <https://www.citylab.com/design/2013/06/designing-libraries-encourage-teens-loiter/5735/>
- Etherington, R. (2009, May 14). Bibliothek Luckenwalde by FF Architekten and Martina Wronna. Retrieved from <https://www.dezeen.com/2009/05/14/luckenwalde-town-library-by-arge-wff/>
- Feinberg, S., Keller, J. R. (2010). *Designing Space for Children and Teens in Libraries and Public Places*. United States of America: American Library Association.
- Fetzer, R.W. (2003). A guide to selecting library furniture. In G.B. McCabe & J.R. Kennedy (Eds.), *Planning the modern public library building* (pp.89-111). Westport, CT: Libraries Unlimited.
- Fialkoff, F. (2010). Third place or thinking. *Library Journal*, 135(29), 8.
- Frearson, A. (2013, August 29). "Libraries are the most important public buildings" - Francine Houben. Retrieved from <https://www.dezeen.com/2013/08/29/libraries-are-the-most-important-public-buildings-francine-houben/>
- Friedmann, A. (1984). *Interior Design: An Introduction to Architectural Interiors*. Vanderbilt Avenue, New York: Elsevier Science Publishing Co., Inc.

- Fuhlrott, R., Dewe, M. (1980). *Library Interior Layout and Design*. New York, London, Paris: IFLA Publications.
- Given, L., Leckie, G. (2003). "Sweeping" the library: Mapping the social activity space of the public library. *Library and Information Science Research*, 25, 365-385. [http://dx.doi.org/10.1016/S0740-8188\(03\)00049-5](http://dx.doi.org/10.1016/S0740-8188(03)00049-5).
- Groat, L., and Wang, D. (2002). *Architectural Research Methods*. New York: John Wiley & Sons Inc.
- Habermas, J. (1991). *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Cambridge, MA: MIT Press.
- Habermas, J., Lennox, S. and Lennox, F. (1974). The Public Sphere: An Encyclopedia Article. *New German Critique* 3: 49-55.
- Hammond, M., Howarth, J. and Keat, R. (1991). *Understanding Phenomenology*. Oxford: Blackwell.
- Hashim, M. S. (2015). *Pattern of Wayfinding and Spatial Cognition for Effective Spatial Planning of Theme Park Architecture*. Master of Philosophy. Universiti Teknologi Malaysia, Skudai.
- Helvacıoğlu, E. (2010). Colour and Wayfinding, 464-468.
- Herman, H. (1991). *Lessons For Students in Architecture*. Rotterdam: 010 Publishers.
- Holt, K. (1990). The Nature of The Design Process. *Design Management; A Handbook of Issues and Methods*. United Kingdom. Blackwell Reference.
- Howard, V. (2011). What Do Young Teens Think about the Public Library?. *The Library Quarterly*, Vol. 81, No. 3 (July 2011), 321-344. <http://www.jstor.org/stable/10.1086/660134>.
- Hoyle, R. H., Harris, M. J., and Judd, C. (2002). *Research Methods in Social Relation*. Belmont, CA: Wadsworth.

- Hussein, A. H. (2012). *A Framework for an Operational Process Based Internet Collaboration Platform for Interdisciplinary Building. Architecture*. Doctor of Philosophy. Universiti Teknologi Malaysia, Skudai.
- Latimer, K. (2007). *USERS AND PUBLIC SPACE: WHAT TO CONSIDER WHEN PLANNING LIBRARY SPACE*. Berlin, New York (Walter de Gruyter - K. G. Saur): IFLA Library Building Guidelines: Developments & Reflections.
- Leckie, G.J., & Hopkins, J. (2002). The public place of central libraries: Findings from Toronto and Vancouver. *Library Quarterly*, 72, 326-372.
- Lin, H., Pang, N., & Luyt, B. (2016). Is the library a third place for young people?. *Journal of Librarianship and Information Science 2015*, Vol. 47(2), 145-155. <http://doi.org/10.1177/0961000614532303>.
- Loh, C. E. (2016, April 18). How Design Can Improve Education. *The Straits Times*. Retrieved from www.straitstimes.com.
- Irwin, A., Amos, R., Joachim, F.W. (1980). *Human Behaviour and Environment*. New York and London: Plenum Press.
- John, P.G. (2012). *Interior Designers' Portable Handbook; First-Step Rules of Thumb for the Design of Interiors*. USA: McGraw Hill.
- Jon, L. (1974). *Designing For Human Behaviour*. Pennsylvania: Dowden, Hutchinson & Ross, Inc.
- Juhnevica, E., & Udre, D. (2010). "Libraries Designed for Users" Nowadays Concept of Library Architecture and Interior. *BOBCATSSS 2010 @ Parma, Italy*.
- Karin, F. (2008). Forming Spaces with Colour and Light: Trends in Architectural Practise and Swedish Colour Research. Retrieved from <http://www.colour-journal.org/2008/2/2/>.
- Karen, B. (2002). *Child & Adolescent Development; An Integrated Approach*. USA: Wadsworth Group.

- Khan, A. (2009). *Better by Design; An Introduction to Planning and Designing a New Library*. London: Facet Publishing.
- Kurtus, R. (2007, December 14). Types of Behaviour Often Studied. Retrieved from www.school-for-champions.com/behavior/types_of_behavior_often_studied.htm (25.2.2016).
- Lushington, N. (2002). *Libraries Designed for Users: a 21st Century Guide*, Neal-Schuman.
- Lynch, K. (1960). Chapter 2: Physical and Spatial Characteristic of Environment. Retrieved from http://www.cpas-egypt.com/pdf/Abd_ElBaser/M.SC/003.pdf (10.3.2016).
- Leckie, GJ., Buschman, JE. (2007). Space, Place and Libraries: An Introduction. In: Buschman JE and Leckie GJ (eds) *The Library as Place: History, Community and Culture*. Westport, CT: Libraries Unlimited, pp. 3-25.
- Mandel, L.H. (2010). Towards and understanding of library patron wayfinding: Observing patrons' entry routes in a public library. *Library and Information Science Research*, 32, 116-130. <http://dx.doi.org/10.1016/j.lisr.2009.12.004>
- Mason, E.A. (1975). A well-wrought interior design. In H.B Schell (Ed.), *Reader on the library building* (pp.160-165). Eaglewood, Co.: Microcard Editions Books.
- Malman, D. (2015). Lighting for Libraries. Retrieved from <https://www.iar.unicamp.br/lab/luz/ld/Arquitetural/diversos/Lighting%20for%20Libraries.pdf> (20.11.18).
- May, F., Black, F.A. (2010). Providing evidence of the life of space: Experiencing Nova Scotia public libraries. *Evidence Based Library and Information Practice*, 5(2), 5-34.
- McCabe, G. B., & Kennedy, J. R. (2003). *Planning the Modern Public Library Building*. London: The Libraries Unlimited Library Management Collection, Greenwood Publishing Group.

- Moore, G. (1979). The Place of Environment-Behaviour Studies in Architecture, *Architecture and Human Behaviour*, 19-21.
- Moore R, Cosco N. Using behaviour mapping to investigate healthy outdoor environments for children and families: conceptual framework, procedures, and applications. In: Ward Thompson C, Bell S, Aspinall P, editors. *Innovative Approaches to Research Excellence in Landscape and Health*. London (UK): Taylor and Francis; (in press).
- Moustakas, C. (1994). *Phenomenological Research Methods*. SAGE.
- Patton, M.Q. (2002). *Qualitative Research and Evaluation Methods (3rd Ed.)*. Thousand Oaks, CA: Sage.
- Peter, E. (2010). *Young People, Place and Identity*. London and New York: Routledge.
- Publishing, B. (2011). Behavior The Determinants of Human, *63(6)*, 1281–1291.
- Raymond. D. G. The Determinants of Human Behaviour. *American Anthropologist*. 2011. *63(6)*: 1280-1291.
- Ritchie, J., Lewis, J., and Elam, G. (2003). Designing and Selecting Samples. In: Ritchie, J., and Lewis, J. (Eds.). *Qualitative Research Practice. A Guide for Social Science Students and Researchers*, (pp.77-108). Thousand Oaks, CA: Sage.
- Rooney-Browne, C. (2009). Libraries as space and place (Public Libraries as impartial spaces in the 21th Century). *IFLA World Library & Information Congress: 75th IFLA General Conference & Assembly*. Torino, Milan, Italy.
- Roth, M. (2011). *Masterpieces: Library Architecture + Design*. Braun Publishing AG.
- Rothbauer, P. (2008). *Triangulation*, In Given (Lisa Ed.), *The SAGE Encyclopaedia of Qualitative Research Methods*, Sage Publications.
- Rubin, Richard E. *Foundations of Library and Information Science (3rd ed)*. 2010. Neal-Schuman Publishers: New York.

- Sannwald, W.W. (2003). Early planning for a new library. In G.B. McCabe & J.R. Kennedy (Eds.), *Planning the modern public library building* (pp.3-16). Westport, Conn.: Libraries Unlimited.
- Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D., Patton, G. C. (2018). The Age of Adolescence. *The Lancet Child & Adolescence Health*, 2018, 223-228.
[https://doi.org/10.1016/S2352-4642\(18\)30022-1](https://doi.org/10.1016/S2352-4642(18)30022-1)
- Siestrzewitowska, M. (2014). (I) Public spaces for the 21st century youth – needs and expectations. *Technical Transactions*, 2013, 99-113.
<http://dx.doi.org/10.4467/2353737XCT.14.015.2598>.
- Smith, D. (2001). Public Library Space Needs and Alternatives Study - Outline.
- Slegers, P. J. C., Moolenaar, N. M., Galetzka, M., Pruyn, A., Sarroukh, B. E., & Zande, B. V. D. (2012). Lighting and student concentration. *Lighting Research and Technology*.
- Spankie, RO. (2009). *Basics Interior Architecture 03: Drawing Out The Interior* (pp. 120-147). UK: Ava Publishing SA.
- Sufar, S., Talib, A., & Hambali, H. (2012). Towards a better Design : Physical Interior Environments of Public Libraries in Peninsular Malaysia. *Procedia - Social and Behavioral Sciences* 42(2012), 131–143.
<http://doi.org/10.1016/j.sbspro.2012.04.174>
- Susan Gilbert Beck, (1996) "Wayfinding in libraries", *Library Hi Tech*, Vol. 14 Issue: 1, pp.27-36, <https://doi.org/10.1108/eb047977>
- Turner, B. (2017). What's the difference between a designer and a decorator?
 Retrieved from <https://home.howstuffworks.com/home-decor/decorating-styles-techniques/designer-versus-decorator1.htm> (1.3.2017)
- Unnikrishnandr. (2013). HUMAN BEHAVIOUR--- AND THE FEW INFLUENCING FACTORS ! Retrieved from
http://creative.sulekha.com/human-behaviour-and-the-few-influencing-factors_603044_blog

- Valenzuela, D., P. Shrivastava (1997). Interview as a Method for Qualitative Research. Retrieved from <http://www.public.asu.edu/~kroel/www500/Interview%20Fri.pdf> (1.3.2017)
- Vinny, L. (2011). *10 Principles of Good Interior*. China: Vivays Publishing.
- Vivoni, F. (2013). Waxing ledges: built environments, alternative sustainability, and the Chicago skateboarding scene. *Local Environment* 18(3), 340-353.
- Vitruvius, P. (1486). *De Architectura*.
- Vozza, S. (2015). Why You Should Never Paint Office Walls White. Retrieved from <https://www.fastcompany.com/3044601/why-you-should-never-paint-office-walls-white> (18.9.18)
- Winchip, S. (2008). *Fundamentals of Lighting*. New York: Fairchild Publications, Inc.
- Worpole, K. (2007). The social value of public spaces.
- Zaal, M., Terry, J. (2007). Knowing What I Can Do and Who I Can Be: Youth Identify Transformational Benefits of Participatory Action Research. *Journal of Ethnographic and Qualitative Research*, 8, (42-55). Retrieved from <http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=314c6099-0392-4554-a1d8-95686c11eb4c%40sessionmgr120>
- Zeisel, J. (1981). *Inquiry by Design: Tools for Environment-Behavior Research*. Cambridge, UK: Cambridge University Press.
- Zeisel, J. (2006). *Inquiry by Design*. New York and London: W.W. Norton & Company Ltd.
- Zimring, C. (2002). Post Occupancy Evaluations: Issue and Implementation. In *Handbook of Environmental Psychology* (pp. 306-319). NY: John Wiley and Sons.