



STREETSCAPE PLANNING GUIDELINES FOR
WALKABLE CAMPUS

BY

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A thesis submitted in fulfillment of the requirement for the
degree of Master of Science (Built Environment)

Kulliyyah of Architecture and Environmental Design
International Islamic University Malaysia

APRIL 2018

ABSTRACT

Walkability is an indicator for a walkable area and it is one of the fundamental principles to achieve sustainable environment. Streets that boost positive attachment between pedestrians and their surrounding would invite and attract more pedestrian utilization to it. This study focuses on street walkability on university campus. Recently, numerous Malaysian campuses are striving toward sustainability by promoting walking and cycling as a culture among students. This study believes that proper streetscape design is essential to enhance street walkability in campus. A walkable street comprises comfort, connectivity, safety and accessibility attributes to enhance the affinity of a street. The lack of concern for streetscape design, results in unfriendly street which seem to be the issue which requires fullest attention by campus planners. This study aims to overcome this shortcoming by suggesting possible streetscape guidelines to optimize streetscape design on campus for walkability enhancement. The objectives are to identify streetscape elements and walkability factors on Malaysian campus, to identify factors influencing pedestrian preferences of streetscape elements on campus, to assess the sidewalk design and determine the Pedestrian Level of Service (PLOS) and to suggest streetscape elements and composition for a walkable campus. Selecting the International Islamic University Malaysia (IIUM) Gombak as the site study, this research adopted a mixed method involving qualitative and quantitative approaches. The quantitative approach was conducted through pedestrian counting and questionnaire survey forms which were distributed among 425 IIUM students who lived on campus. Qualitative techniques involving the site inventory and observation, which aimed at assessing campus streetscape elements, were completed using the site inventory checklist. Frequencies, Relative Important Index (RII), Pedestrian Level of Service (PLOS), and Exploratory Factor Analysis (EFA) were used to analyzed the data. The findings indicate that comfort is the most significant factor contributing to street walkability, followed by safety, accessibility and connectivity. Pedestrian activities, physical safety, permeability and directness, pedestrian conflicts, ease of movement, traffic safety, vision at night, access to facilities, sidewalk connectivity and time/distance factors were 10 underlying sub-factors identified under these four main factors, which were highly influenced by streetscape elements that formed the streets area. All of these findings were later used to produce suitable streetscape guidelines for a walkable campus.

خلاصة البحث

القدرة على المشي أو ما يدعى الإمشائية في المنطقة القابلة للمشي في الشوارع، وهو واحد من المبادئ الأساسية لتحقيق بيئة مستدامة. علماً أن الشوارع التي تعزز ممرات المشاة والمناطق المحيطة بها تترك أثر إيجابي لجذب المزيد من المشاة إليها. إن هذه الدراسة تتركز على المشي في شوارع الحرم الجامعي. في الأونة الأخيرة، العديد من الجامعات الماليزية تسعى جاهدة من أجل تحقيق الاستدامة من خلال تعزيز المشي وركوب الدراجات بين الطلاب. هذه الدراسة، تعتمد على التأكيد بأن تصميم الشوارع المناسبة هو ضروري لتعزيز المشي في شوارع وممرات الحرم الجامعي. إن الشارع المدعم بمناطق قابلة للمشي يؤمن بشكل إيجابي الراحة، والاتصال، والسلامة وسهولة الاتصال بالممرات و تقارب بينها. عدم الاهتمام بتصميم الشوارع، أدى إلى جعل الشارع غير ودي حيث يبدو أن هذه القضية تتطلب قدر من الاهتمام. وتهدف هذه الدراسة إلى التغلب على هذا القصور من خلال اقتراح إرشادات الشوارع الممكنة لتحسين تصميم الشوارع في الحرم الجامعي لتعزيز المشي. وتتمثل الأهداف في تحديد عناصر الشوارع وعوامل المشي في الحرم الجامعي، لتحديد العوامل التي تؤثر على تفضيلات المشاة من عناصر الشوارع في الحرم الجامعي، لتقييم تصميم الرصيف وتحديد مستوى المشاة للخدمة (بلوس) واقتراح عناصر الشوارع وتكوينها في الحرم لتصبح قابلة للمشي. وقد اختارت هذه الدراسة المنهج المختلط للنهج النوعي والكمي أيضاً. تم توزيع مقاربة كمية تم إجراؤها من خلال عد المشاة واستمارات استبيان. الاستبيان بين 425 من أفراد عينة الدراسة من طلاب الجامعة الإسلامية الذين عاشوا في الحرم الجامعي. التقنيات النوعية تنطوي على جرد الموقع والمراقبة، وتهدف إلى تقييم عناصر الشوارع الحرم الجامعي وبذلك يتم الانتهاء باستخدام القائمة المرجعية. تم استخدام الترددات والمؤشرات الهامة النسبية، ومستوى الخدمة للمشاة (بلوس)، وتحليل العوامل الاستكشافية (إفا) لتحليل البيانات. وأشارت النتائج إلى أن الراحة هي أهم عامل يسهم في إمكانية المشي في الشوارع، تليها السلامة، وإمكانية الوصول، والاتصال. علماً أن أنشطة المشاة هي : السلامة الجسدية والنفاذية وحركة الاتجاه المباشر والاتصال بالمشاة وسهولة الحركة والسلامة المرورية والرؤية الليلية والوصول إلى المرافق واتصال الأرصفة وعوامل الوقت / المسافة. كل هذه العشرة عوامل الفرعية أساسية تم تحديدها في إطار هذه العوامل الأربعة الرئيسية، متأثرة بشدة بعناصر الشوارع التي شكلت منطقة الشوارع. تم استخدام كل هذه النتائج لاحقاً لإنتاج مبادئ توجيهية مناسبة في شوارع الحرم الجامعي.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Amanina Binti Nashar

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ACKNOWLEDGEMENTS

In the name of Allah the Most Gracious and Merciful

First of all, I would like to express my *tahmid* to Allah s.w.t for his blessing, *salawat* and *salam* to my beloved Prophet Muhammad P.B.U.H, have been with me throughout the duration of my research in Master of Science in Built Environment. It is due to His Mercies and Blessings on me, that ease the herculean task of completing this thesis.

I must offer my most profound gratitude and my sincere appreciation to my supervisor, Associate Professor Dr Nor Zalina Harun for all of her expertise, support, kindness, guidance, enthusiasm and encouragement from the start till the completion of this thesis journey. I would also like to express my gratitude to my co-supervisor, Associate Professor Dr Syahriah Bachok for guiding me with her expertise during my research journey. Thank you to all respondents and persons who had contribute directly and indirectly throughout my research.

I am also indebted to my dearest companions, Haza Hanurhaza Md Jani, Aisyah Abu Bakar, Syaibatul Islamiah Che Man, who willing to spare time from their busy schedule to give continuous support and advice for me to finish up this thesis. Even though they are busy with their thesis, but they still willing to give their ideas and helping hands as soon as I am in need. Their constructive advice, kind assistance and encouragement to improve this thesis will always be remembered. Furthermore, I have to offer my special thanks to my family, deeply thank and forever indebted to my parents especially my mother Jasidah Abd Rahim, who gives me hearty support, love and patient that have made my journey more bearable. My late father who had passed away, always be my inspiration and forever remembered for his words to keep my pace till the end of this journey.

It is hope that my research could benefit the *ummah* and the person who involved in this related field for the upcoming future. *Insyallah*, may all of us be granted the knowledge given by Allah s.w.t in a beneficial way to manage this Earth as His *khalifah* and as His *amanah*. *Amin* and *Alhamdulillah* once again.

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LIST OF ABBREVIATION

ATM	Automated Teller Machine
HCM	Highway Capacity Manual
IIUM	International Islamic University Malaysia
JPBD	Jabatan Perancang Bandar Dan Desa (Department of Urban and Regional Planning)
LOS	Level of Services
NLP	National Landscape Planning
RII	Relative Important Index
SACC	Safety, Accessibility, Comfort , Connectivity
USM	Universiti Sains Malaysia
UPM	Universiti Putra Malaysia