

Proceeding Book



GO GREEN2015 INTERNATIONAL POSTGRADUATE CONFERENCE ON GLOBAL GREEN ISSUES

"Incorporating Green Approaches for Resilient Future"

7 - 8 OCTOBER 2015 | Dewan Kuliah Al-Khawarizmi

Universiti Teknologi MARA, Cawangan Perak
Kampus Seri Iskandar
32610 Seri Iskandar
Perak, Darul Ridzuan, MALAYSIA
Website: www.perak.uitm.edu.my/gogreen2015/
Email: gogreen2015@perak.uitm.edu.my



9789675741357

INTERNATIONAL POSTGRADUATE CONFERENCE ON
GLOBAL GREEN ISSUES

GO GREEN2015

‘Incorporating Green Approaches for Resilient Future’

7-8 OCTOBER 2015
Dewan Kuliah Al-Khwarizmi
Universiti Teknologi MARA Cawangan Perak

ISBN 978 – 967 -5741-35-7
eISBN 978 – 967 -5741-36-4

copyright
Fakulti Senibina, Perancangan & Ukur,
Universiti Teknologi MARA Cawangan Perak,
2015

ORGANISED BY
Fakulti Senibina, Perancangan & Ukur
Universiti Teknologi MARA Cawangan Perak
Kampus Seri Iskandar
32610 Seri Iskandar,
Perak Darul Ridzuan, MALAYSIA
Tel: +605 374 2000
Fax: +605 374 2244

INDEX

		Page No.
Keynote Paper		
	<i>Ken Yeang Practice Report</i> Key Yeang	i
SECTION I: GREEN DESIGN CONCEPT		
Paper ID	Title of the Paper and Authors	
GR1001	<i>The Composition Of Usability Evaluation In Assessing Quality of the Display Case Lighting</i> Siti Norsazlina Haron, Norashikin Abdul Karim, Afzanizam Muhammad, Anuar Talib , Md Yusof Hamid	1
GR1002	<i>Usability Evaluation for Hospital Building Quality In-Use</i> Siti Norsazlina Haron, Md Yusof Hamid , Yuhainis Abdul Talib	7
GR1003	<i>The Green Adaptive Reuse of Historical Buildings</i> Kartina Alauddin, Mohd Fisal Ishak, Noorzalifah Mohamed	14
GR1004	<i>Industrial Building System; Does it good for sustainable building?</i> S.Roshanfekar, N.M Tawil, N.A. Goh	19
GR1011	<i>Book Transit Shelter : A Method in Developing a Zero-Waste Environment and Healthy Campus Community</i> Muhammad Naim Mahyuddin, Hafizah Mohd Latif, Muhammad Redza Rosman, Nor Sahidah Samsudin, Rafizah Mohamed Nordin	22
GR1015	<i>Green Concepts Through Shape-Grammar – The Language Of Intermediate Spaces In Traditional Malay Houses</i> Suzana Said, M. Sabrizaa Abdul Rashid, Rosmawati Mohamed, Neta Suredah Baharum, Izatul Asyikin Nordin	27
GR1017	<i>Characterization of Lime Plaster of Ipoh Royal Club for Conservation Purpose</i> Farah Reeza Abdul Razak, Siti Norlizaiha Harun	32
GR1018	<i>An Overview On The Typology Of Shophouses' Façade At The Heritage Area in Ipoh City</i> Wan Nordiana Wan Ali, Nurul Huda Abdul Hadi, Noor Rizallinda Ishak	38
GR1019	<i>Sustainability Of Building Elements In Bidayuh Traditional Longhouse Construction</i> Janet Victoria, Siti Akhtar Mahayuddin, Wan Akmal Zahri Wan Zaharuddin, Siti Norlizaiha Harun, Balkhiz Ismail, Noorsaidi Mahat	45

GR1021	<i>Ephemeral Architecture: In Between Permanence and Impermanence towards Sustainable Architecture.</i>	51
	Sayed Muhammad Aiman Sayed Abul Khair, Ismail Samsuddin	
GR1022	<i>In Search of Malay Landscape Design: Characteristic and Identification of Traditional Landscape at Sungai Perak</i>	58
	Mohd Khazli Aswad Khalid, Mohd Sabrizaa Abd Rashid ,Ahmad Zamil Zakaria	

SECTION II: GREEN TECHNOLOGY

Paper ID	Title of the Paper and Authors	Page No.
GR2001	<i>New Environmentally Lightweight Building Materials from Hybrid Inorganic Polymer-Wood Particles</i>	66
	Siti Noorbaini Sarmin	
GR2004	<i>Hybrid Technology for the use of Solar Energy: The Challenge towards Green Energy</i>	72
	S. I. Hossain, M. R. Al-Mamun, S. Sikdar, M. Al-Amin, S. C. Majumder, M. R. Hasan, M. Z. H. Khan	
GR2006	<i>Waste Management Practices and Recycling Intention among Undergraduates Students in Higher Learning Institution</i>	79
	Siti Fahazarina Hazudin, Anis Barieyah Mat Bahari, Alia Ezrie Ashiqin Jamaludin	
GR2007	<i>Thioflavin Dye Degradation by Using Magnetic Nanoparticles Augmented Polyvinylidene Fluoride (PVDF) Microcapsules</i>	83
	Mohamed Syazwan Osman, KaMan Kong, Boon Seng Ooi, Bassim H. Hameed, Jit Kang Lim	
GR2013	<i>Concrete Compressive Strength Development when Polyethylene Terephthalate Partially Replaces Sand</i>	87
	Muhammad Redza Rosman, Norishahaini Mohamed Ishak	
GR2015	<i>Evaluation of Laser-Printed Paper Deinking Quality Facilitate By Lipase and Esterase Enzymes</i>	95
	Nurul Shafika Azmi, Nik Raikhan Nik Him	
GR2016	<i>Green Approach in Road Construction</i>	102
	Suhaila Ali, Nurul Fatihah Yahaya , Norbaizura Abu Bakar, Mohd Hafiz Saberi, Norhafizah Yusop, Farhan Md Dahlan	

GR2017	<i>Establishing a Strategic Framework of Green Procurement for the Malaysian Construction Industry</i> MohdSallehuddin Mat Noor , Fadzil Hassan	108
GR2019	<i>Environmental Psychology: An Analysis on Lighting Efficiency of the Architecture Studio in UiTM Perak</i> Fazidah Hanim Husain, Zafuan Husri ,Farhah Amani	113
GR2020	<i>Effect of Kenaf Fibre and Rice Husk Incorporation on Melt Flow and Mechanical Properties of Calcium Carbonate/Polypropylene Hybrid Composite</i> Mohd Muizz Fahimi Mohamed, Rahmah Mohamed	119
GR2027	<i>Surfacing Effects on Thermal Condition in Urban Open Space</i> Liyana Ahmad Bazuli, Azhan Abdul Aziz	124
GR2028	<i>Impact Of Urban Block Configuration And Direction On Urban Temperature Increase In Hot, Humid Regions</i> Lin Yola, Ho Chin Siong	131
GR2029	<i>Modular Construction System in Malaysia: Issues for Research in Sustaining an Affordable Home Projects</i> Salmiah Aziz, Mohd Rofdzi Abdullah	140
GR2030	<i>Review on Indoor Environment Quality Parameters Towards Healthier Green Buildings in Malaysia</i> Fadhilah Che Aziz, Md Yusof Hamid	153
GR2032	<i>Green Solar Dehydrator</i> A. N. Alias, M. H. Khalid, N. F. M. Sahapini, Z. Mahfodz, F. Abdullah, R. Julius, M. A. Yahya, F. Fariesha	161
GR2035	<i>Solar Energy: Dilemma and the Way Forward</i> Norhafizah Yusop, Norbaizura Abu Bakar, Suhaila Ali, Mohd Hafiz Saberi, Mohamad Akmal Mohamad Najib, Noor Zawani Yusop	166
GR2037	<i>An Overall Thermal Transfer Value (OTTV) – Based Approach in Analysing the Energy Efficiency of Buildings: A Review</i> Afiqah Ahamad, Wan Abdullah Wan Alwi, Azman Zainoabidin	172
GR2040	<i>Natural Fibre as Fibrous Reinforced in Polymer Modified Mortar: A Review</i> Azamuddin Husin, Mahyuddin Ramli, Cheah Chee Ban	177
GR2042	<i>Flame Retardancy Study Of Recycled Polymeric Foam Filled Composite Building Material.</i> Syed Anas Syed Mustafa, Rahmah Mohamed, Lily Soraya Amerudin	184

GR2044	<i>Improving Overall Thermal Transfer Value of Office Tower Building in Malaysia. Case Study : Ministry of Women Family and Community Development, Lot 4G11, Putrajaya</i> Azman Zainoabidin, Amirul Amin Ismail	191
GR2045	<i>Towards Green Roads in Malaysia: Review of Road Characteristics Effects On Road Surrounding Microclimates with Respect to Roadside Trees</i> Nasibeh FaghihMirzaei, Sharifah Fairuz Syed Fadzil, Aldrin Abdullah, Nooriati Binti Taib, Reza Esmaeilifar	200
GR2049	<i>Carbon Footprint Calculator for Children</i> Romiza Md Nor, Haleeda Azwa Abdul Hadi	208

SECTION III: GREEN MANAGEMENT

Paper ID	Title of the Paper and Authors	Page No.
GR3001	<i>Project Manager Success Factors In Managing Green Buildings In Malaysia : Knowledge and Skills</i> Asniza Hamimi Abdul Tharim, Aifa Syazwani Zainudin, Nur'Ain Ismail, Thuraiya Mohd, Noor Aileen Ibrahim	213
GR3002	<i>Role of Real Estate Valuation Surveyors in the Malaysian National Taxation</i> Mohd Hasrol Haffiz Aliasak , Mohd Farid Bin Sa'ad	221
GR3003	<i>An Overview of the Challenges in Malaysian Green Construction</i> Asniza Hamimi Abdul Tharim, Aifa Syazwani Zainudin, Noraidawati Jaffar	228
GR3004	<i>Overview of Lean Issues in Managing the Green Construction Project</i> Wan Nur Syazwani Wan Mohammad, Mohd Rofdzi Abdullah	235
GR3005	<i>Identifying the Challenges in Obtaining Green Building Index (GBI) Certification In Construction Industry</i> Izatul Farrita Mohd Kamar, Lilawati Ab Wahab, Nor Suzila Lop, Noor Aishah Mohammad Hamdan	241
GR3006	<i>Stakeholder's Pressures on the Firm's Environmental Strategy in Malaysia</i> Rohati Shafie, Loke Siew Phaik	247
GR3007	<i>Key Success Factors of Green Building Implementation in Malaysia Construction Industry</i> Nor Suzila Lop, Asmalia Che Ahmad, Nik Aqlima Diyana Nik Zulkipli	254

GR3008	<i>The Effectiveness of the Implementation of QE/5S towards Quality Environment at Workplace</i> Norhaslina Jumadi, Nurul Sahida Fauzi, Lizawati Abdullah, Wan Nur Syazwani Wan Mohammad, Johana Yusof	363
GR3009	<i>Outsourcing Property Management Perspective: Universities in the District of Perak Tengah</i> Nurul Sahida Fauzi, Noratikah Kamarudin, Siti Nadiah Mohd Ali, Nor Aini Salleh, Noraini Johari	268
GR3010	<i>The Facilities Management Standard Service Category</i> Zuraihana Ahmad Zawawi, Wan Samsul Zamani Wan Hamdan, Nur Azfahani Ahmad, Nurul Fadzila Zahari	273
GR3011	<i>The Enhancement Criteria of Green Building Implementation For Property Development in Perak, Malaysia – Valuers’ Perspective</i> Roshdi Sabu, Hayroman Ahmad, Lizawati Abdullah	279
GR3014	<i>Preliminary Study on Waste Management for Implementation of Green Highway</i> Asmalia Che Ahmad, Nur Illiana Husin, Abdul Muhaimin Ab Wahid, Syahrul Nizam Kamaruzzaman	286
GR3016	<i>Critical Motivation Factors among Project Managers to Achieve Successful Project in Malaysian Construction Industry</i> Farhan Md Dahlan, Muhammad Amirul Fahme Ahmad, Siti Nadiah Mohd Ali, Siti Sarah Mat Isa, Norbaizura Abu Bakar	293
GR3018	<i>The Contractor’s Attributes For The Construction Project Success</i> Mohd Hafiz Saberi, Norbaizura Abu Bakar, Norhafizah Yusop, Suhaila Ali, Mohd Fisal Ishak, Farhan Md Dahlan, Noraini Abdul Rani	300
GR3020	<i>Review on Malaysia’s GreenRE in Comparison with Singapore’s GreenMark and UK’s BREEAM</i> Halmi Zainol, Fadhilah Che Aziz, Suharto Teriman, Haryati Mohd Isa, Muhamad Asri Abdullah Kamar	305
GR3021	<i>Risk Management Plan (RMP); Implementation and Challenges towards Sustainability and Green Concept for Public Projects in Terengganu</i> Yuhainis Abdul Talib, Siti Nirwana Mat Usof, Kharizam Ismail	311
GR3023	<i>Imperfection Of Tender Document: A Solution Towards Sustainable Construction Practice In Malaysia</i> Mohd Esham Mamat, Shahela Mamter, Mohammad Sani Mat Hussein, Norazlin Mat Salleh	318

GR3024	<i>Benefits of Green Building from Client's Perspective</i> Norazlin Mat Salleh, Nik Noor Hazleeda Baharuddin, Shahela Mamter, Mohd Esham Mamat	322
GR3025	<i>Green Material Procurement Implementation Towards The Green Buildings</i> Shahela Mamter, Siti Rohayu Jusoh, Mohd Esham Mamat, Norazlin Mat Salleh	328
GR3026	<i>A Review Of Ex-Mining Land Reclamation as Construction Project Activities: Focusing In City Of Ipoh</i> Mohd Najib Abd Rashid, Hayroman Ahmad, Siti Jamiah Tun Jamil, Noor Azam Yahaya, Mohamad Hamdan Othman	333
GR3027	<i>Repair and Maintenance Works For Low Cost Housing; Issues And Solution</i> Yuhainis Abdul Talib, Amirul Helmi Abdul Malik , Siti Norsazlina Haron	340
GR3028	<i>An Overview of Time and Cost in Arbitration for Construction Projects</i> Azira Ibrahim, Zulhabri Ismail, Thuraiya Mohd, Ida Nianti Mohd Zin	347

SECTION IV: GREEN CULTURE

Paper ID	Title of the Paper and Authors	Page No.
GR4002	<i>An Assessment of Carbon Footprint at UiTM Seri Iskandar Perak, Malaysia</i> Nor Izana Mohd Shobri, Wan Noor Anira Wan Ali @ Yaacob, Norizan Mt Akhir, Siti Rasidah Md Sakip	352
GR4005	<i>Eco-Friendly Food Packaging: Young Consumer 's Perception & Practice</i> Norsyamira Shahrin , Rabiatal Adawiyah Abd Rahman, Noorliza Zainol, Noor Saliza Salmi, Mohd Faisal Abdul Wahab	357
GR4006	<i>Ethico-Legal Issues In The Medical Profession: A Case Study Of Nursing Profession In The World</i> Lateef Wale Adeyemo, Syahirah Abdul Sukor, Amalina Ahmad Tajudin, Ali H Ali Beltamer	364
GR4008	<i>Green Perception and Behavior among Students at UiTM Melaka</i> Siti Norashikin Bashirun, Nurldayu Badrolhisham, Farah Shazlin Johari, Nurhafizah Mohd Zolkapli, Nor Maslia Rasli Samudin, NurFaithzah Jamian	373

GR4009	<i>Geographical Information Systems (GIS) Approach For Mapping The Aboriginal Children Malnutrition Growth : A Case In Kemar, Perak</i> Haslina Hashim, Izrahayu Che Hashim, Suzanah Abdullah, Fadhilah Md Isa, Noorfatekah Talib	378
GR4010	<i>A Preliminary Study of Cinemagraph as A Tool In Enhancing Public Service Announcement (PSA) On Smoking Habit Issue</i> Fahmi Samsudin, Rosita Mohd Tajuddin, Nik Ridzuan NikYusoff	388
GR4011	<i>Green Branding: The Effect of Green Trust towards Brand Loyalty of the Five-Star Hotel Guest</i> Muhd Nabil Hanif Hassim , Mohd Raziff Jamaluddin	394
GR4014	<i>Students' Knowledge in the Waqf Land Concept</i> Siti Nadiyah Mohd Ali, Rashidah Paujah Ismail , Abd. Halim Mohd Noor, Nurul Sahida Fauzi, Nor Nazihah bt Chuweni, Farhan Md Dahlan	400
GR4016	<i>The Awareness of Generation 'Y' on Green Building Development in Malaysia</i> Syarifah Nur Nazihah Syed Jamalulil, Haryati Mohd Isa, Nurul Huda Ahmad	405

SECTION V: GREEN ENVIRONMENT

Paper ID	Title of the Paper and Authors	Page No.
GR5001	<i>A Conceptual Study of Connectivity Elements Towards Successful Green Network</i> Nor Hamizah Abdul Hamid, Muhamad Ezran Zainal Abdullah, Nik Hanita Nik Mohamad	411
GR5006	<i>Sustainable Indicator for Feature Attributes Assessment of Urban Green Space</i> Rabi'ah Ahmad , Abdul Nassir Matori	417
GR5012	<i>Exploring the Relationship between Community Happiness and Environmental Setting</i> Siti Rasidah Md Sakip, Khalilah Hassan, Azran Mansor	425
GR5013	<i>The Potential of Lake in Generating the Urban Community Development. Case Study: Putrajaya Lake, Federal of Putrajaya.</i> Wan Noor Anira Wan Ali @ Yaacob, Norhafizah Abdul Rahman, Marina Abdullah, Nor Izana Mohd Shobri	433

GR5019	<i>Gis-Based Land Suitability Analysis Using AHP For Public Parks Planning In Kota Bharu, Kelantan</i> Khalilah Hassan, Izrahayu Che Hashim, Siti Syamimi Omar	439
GR5021	<i>Generating of Cotidal Dataset by Spatial Interpolation Techniques</i> Khadijah Sahdan, Syed Ahmad Qusoiri Syed Abdul Karim, Othman Mohd Yusof	446
GR5023	<i>Multiple Regeneration of Clinacanthusnutans Nodal Explants by using 6-Benzylaminopurine (BAP) Hormone</i> Siti Zulaiha Ghazali, Saiyidah Nafisah Hashim	451
GR5026	<i>Biodegradation of Petroleum Oil by using Isolated Penicillium sp.</i> Nabilah Razak, Saiyidah Nafisah Hashim, Chia Chay Tay	455
GR5030	<i>Students Awareness on Environmental Quality in Term of Daily Life Routine</i> Noorlida Daud, Wan Noor Anira Wan Ali @ Yaacob, Anwar Fikri Abdullah	460

EDITORIAL BOARD

Chief Editor

Dr. Atikah Fukaihah Amir

Language Editors:

Jeyamahla Veeravagu

NoorAileen Ibrahim

Nur Fatima Wahida Mohd Nasir

Noraini Johari

Nurul Ain Hasni

Mohamad Syafiq Ya Shak

Wan Faridatul Akma Wan Mohd Rashdi

Zarlina Mohd Zamari

BOARD OF REVIEWER

Head:

Assoc. Prof. Dr. Mohd Sabrizaa Abd Rashid

Research Area:

Green Design Concept	Assoc. Prof. Dr. Mohd Sabrizaa Abd Rashid
Green Technology	Dr. Azhan Abdul Aziz
Green Management	Dr. Ida Nianti Mohd Zain
	Dr. Sr. Hajah Nor Aini Salleh
Green Culture	Dr. Lilawati Ab Wahab
Green Environment	Dr. Suharto Teriman

Reviewers:

Assoc. Prof. Dr. Ahmad Faisal Alias, UiTM Cawangan Perak
Assoc. Prof. Dr. Halmi Zainol, UiTM Cawangan Perak
Assoc. Prof. Dr. Ismail Samsuddin, UiTM Cawangan Perak
Dr. Anis Sazira Bakri, UiTM Cawangan Shah Alam
Dr. Asmat Ismail, UiTM Cawangan Perak
Dr. Asmalia Che Ahmad, UiTM Cawangan Perak
Dr. Hj Ashrof Zainuddin, UiTM Cawangan Perak
Dr. Atikah Fukaihah Amir, UiTM Cawangan Perak
Dr. Fadzil Mat Yassin, UiTM Cawangan Perak
Dr. Haryati Mat Isa, UiTM Cawangan Perak
Dr. Hayroman Ahmad, UiTM Cawangan Perak
Dr. Kharizam Ismail, UiTM Cawangan Perak
Dr. Kartina Alauddin, UiTM Cawangan Perak
Dr. Kushairi Rashid, UiTM Cawangan Perak
Dr. Mahanim Hanid, University of Malaya, Kuala Lumpur
Dr. Muhamad Asri Abdullah Kamar, UiTM Cawangan Perak
Dr. Mohd Fadzil Abdul Rashid, UiTM Cawangan Perak
Dr. Mohd Hasrol Haffiz Aliasak, UiTM Cawangan Perak
Dr. Mohamad Mohd Derus, UiTM Cawangan Perak
Dr. Norhasandi Mat, UiTM Cawangan Perak
Dr. Norhafizah Abdul Rahman, UiTM Cawangan Perak
Dr. Nooriha Mansoor, UiTM Cawangan Perak
Dr. Sallehan Ismail, UiTM Cawangan Perak
Dr. Suzana Said, UiTM Cawangan Perak
Dr. Siti Rasidah Md Sakip, UiTM Cawangan Perak
Dr. Thuraiya Mohd, UiTM Cawangan Perak
Dr. Yuhainis Abdul Talib, UiTM Cawangan Perak

Environmental Psychology: An Analysis on Lighting Efficiency of the Architecture Studio in UiTM Perak

Fazidah Hanim Husain¹, Zafuan Husri², Farhah Amani³

^{1,3}Department of Architecture, Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA, UiTM (Perak), Seri Iskandar Campus, 32610 Bandar Seri Iskandar, Perak DarulRidzuan, Malaysia,

Email: fazid896@perak.uitm.edu.my

farhah.amani@gmail.com

²Centre for Knowledge & Understanding of Tropical Architecture & Interior (KUTAI)

Universiti Teknologi MARA, UiTM (Perak), Seri Iskandar Campus, 32610 Bandar Seri Iskandar, Perak Darul Ridzuan, Malaysia,

Email: zafuanhusri@gmail.com

Abstract

Lighting is one of the key elements in any space and building infrastructure. Good design for a space in the building requires sufficient light that contribute to the efficiency of an activity. The correct method allows natural light to transmit, reduce heat and glare in providing a conducive learning environment. Light plays a significant influence to the quality of space and contribute focus of the students in an architecture studio. Previous research has shown that emotions, behavior and mood of the students were also controlled by the effect of light. The operations of artificial lighting that have been used most of the time in an architecture studio during day and night may create lavishness and inadequacy at the same time. Therefore, this paper focuses to identify the quality of lighting of the architecture studio in UiTM Seri Iskandar, in order to instill a creative learning environment. The methodology of this analysis is providing lighting measurement by using the equipment named LM-8100, using a questionnaire in gauging the lighting comfort level from students' perspective. Findings from the analysis will determine the level of lighting settings in accordance to the Malaysian Code of Practice on Indoor Air Quality standards. The result will identify the students' creative performance on the learning activities in their studio.

Keywords: Lighting, Architecture, Architecture Studio, Indoor environmental quality, creative learning

1.0 Introduction

Studio is a place where student spend most of the time of a day in order to complete a design project. Studio is the most important space in architecture education where student interacts, struggling on projects, sharing information and learning from peers (Ban, 2015). Studio learning involves task lighting which provide high illumination for a specific work such as drawing and detailing. A long hour's work need better task lighting to avoid physical discomfort such as fatigue and learning inefficiency (M.Winterbottom&M.Wilkins, 2009).

Council of Architectural Education Malaysia (CAEM) was formed under the supports Lembaga Arkitek Malaysia (LAM) to regulate all matters relating to architectural education (LAM, 2015). The CAEM mission is to ensure excellence in architecture education in accordance to the world standard. Under Policy and Procedure for Accreditation of Architectural Programmes, CAEM advises all architecture schools to have an allocation of 2.5 sqm work space per student in studio. Apart from the private work space, institutions shall also provide space & facilities for presentation & exhibition of student's works, laboratories, model making workshop, facilities for research, information and data exchange for new technologies to support effective learning environment (LAM, 2015). In 2012 and 2014 respectively, architecture program in UiTM Perak has successfully been accredited to be a recognized architecture school in Malaysia and the UK (RIBA, 2015). However, on a lighting issue, there is no requirement on the illuminance level for a studio space. Based on previous study, insufficient lighting setting in an architecture studio can affect student ability to perceive visual stimuli in a short term and vision impair in a long run (A.Che-Ani, N.Tawil&A.Musa, 2012).

1.1 Mood and Performances

As the students spend most of their time in the studio than a classroom, the lighting must be designed to fulfill not only the visual task activities but also to meet the other interpersonal and physiological needs as far as possible. This is in agreement with a previous study that higher illuminance during daytime can led to a greater alertness (J.Phipps-Nelson, J.Redman, &D.Dijk, 2003). Although an individual's mood and performance can be increased

in naturally lit environment (Z.Gou,S.Lau, &F.Qian, 2013), an optimal indoor environment with higher illuminance level, lighting uniformity, absent of glare and lighting ambience can contribute to high performance and motivate workers (J.Veitch&J.Geerts, 2005). Study done by Liberman (1994) also stated that light is one of main factor in maintaining health and poor lighting condition can influence a person’s mood and energy. Lighting also has an important role in revealing the form of an interior, especially in buildings of high architectural merit (Bean. R, 2004). The amount of light required for a particular task may vary from individual to individual, depending on upon their visual capacity. For the example, age or eyesight, it is possible to determine a lighting level that will meet the requirements of the most people.

1.2 Indoor Environmental Quality

Previous experimental investigation on indoor environmental quality of the architecture studio in UKM by A.Che-Ani, N.Tawil&A.Musa, (2012) has shown the lighting setting is not within the range of Malaysian Standard MS1525:2007. This research is to study with reference to the earlier work concerning the lighting performance of the architecture studio in UiTMPerak.It is necessary to investigate does the lighting provided in the year three UiTM Seri Iskandar architecture studio are within the scope of Malaysian Code of Practice on Indoor Air Quality.Since each student in the studio is well equipped with a drawing and a working table, main activity happen in the studio will involved reading, writing and drawing. Based on the Malaysian Code of Practice on Indoor Air Quality (Figure 1.1), the nearest luminaire reference to architecture studio will be drawing office which the luminaire level is at the range of 300-400lux.

Task and examples of applications	Illuminance [Lux]
Lighting to infrequently used areas	
Minimum service illuminance	20
Interior walkway and car-park	50
Hotel bedroom	100
Lift interior	100
Corridor, passageways, stairs	100
Escalator, traveller	150
Entrance and exit	
Staff changing room, cloak room, lavatories, stores	100
Entrance hall, lobbies, waiting room	100
Inquiry desk	300
Gate house	200
Lighting for working interiors	
Inrequent reading and writing	200
General offices, shops and stores, reading and writing	300 - 400
Drawing office	300 - 400
Reception	150
Restaurant, cafeteria	200
Kitchen	150 - 300
Lounge	150
Bathroom	150
Toilet	100
Bedroom	100
Classroom, library	300 - 500
Shop, supermarket, department store	200 - 750
Museum and gallery	300
Localised lighting for exacting task	
Proof reading	500
Exacting drawing	1000
Detailed and precise work	2000

Figures 1.1 Malaysian Standard (MS) 1525: 2007 “Code of Practice on Energy Efficiency and Use of Renewable Energy for Non-Residential Building

2.0 Tools and Methods

The experiment was conducted by collecting the lighting data at the third year (semester 5) architecture studio located at ground floor, JabatanSenibina Annex 1 building, UiTM Perak. The studio is 11.85 meter x 11.85 meter with 140.422sqm that accommodate approximately 30 students for that particular semester. The lighting level reading is measured by using equipment named LM-8100. Lighting reading is taken at 9 specific location located as shown in figure 2.1 and the reading taken for eight hours for two consecutive days. Based on the reflective ceiling plan, there are 17 units of typical fluorescent with reflector with each unit contains two fluorescent lamps.

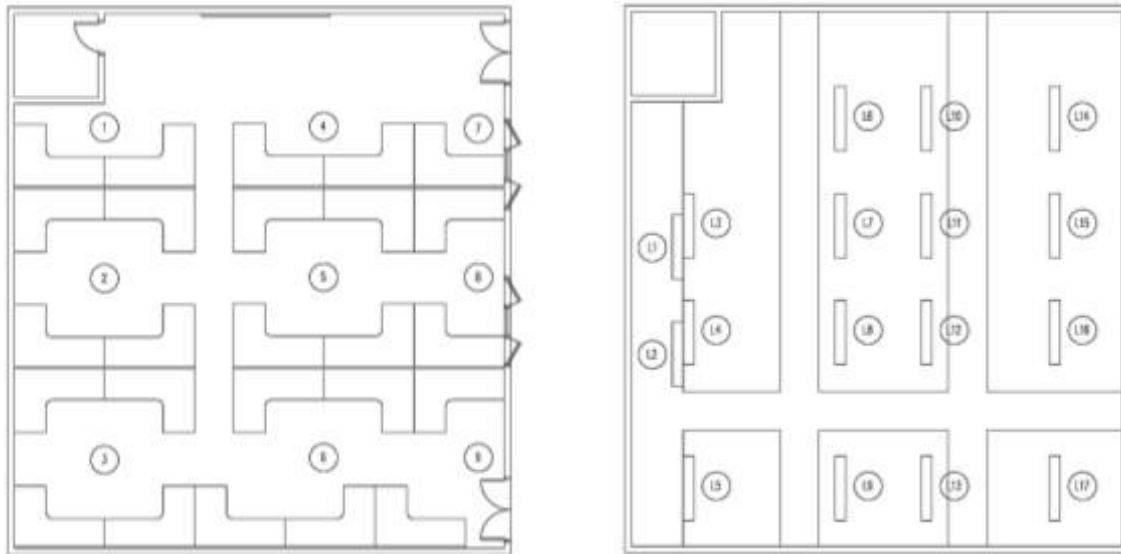


Figure 2.1 Floor plan(left) and reflected ceiling plan (right) of the year three architecture studio in UiTM Seri Iskandar

3.0 Results and Discussions

3.1 Lighting Analysis

Table 1 show the tabulate result of the lighting analysis result and figure 3.2 shows the chart illuminance in lux against time on day one while figure 3.3 shows on day two. The data which is highlighted with yellow color is recorded as the lowest reading during both day and the data which is highlighted with red color is recorded the highest illuminance reading at point 1 which is 150. The lowest illuminance reading recorded is 110 lux on day one at time 1400. Meanwhile at point 8, the highest reading recorded is on day two which is 468 lux at 1600. The readings maintain in a range of 400+ lux on both day from 1400 until 1600, however decreases after 1700. Meanwhile, reading at point 6 which is highlighted in orange color, maintain in the range of 300+ lux except for day one the reading is 217 at 2100. While the rest of the area, remain in general reading within the range 150 lux to 287 lux and the readings are below the recommended illuminance level set by Malaysian Standard as shown in figure 1.1.

From the findings, point 1 show the lowest illuminance reading. Based on the floor plans (figure 2.1), point 1 is located far from the windows and received the least of natural lighting. Moreover, there are no luminaire provided at this area (figure 2.1). As a result, point 1 area give insufficient lighting to the workstations provided. Points 8 however experience the highest reading from 1400 to 1600 since it is located near the window. Point 8 workstation benefits both naturally and artificial lit environments but the reading decreases significantly from the 1700 onwards as a matter of decrease source of daylight. At point 6, the overall illuminance reading on both day achieved the appropriate range of illuminance level. The illuminance range is between 300 lux to 386 lux which has fulfill the requirement of ideal illuminance for studio space based on the Malaysian Standard in figure 1.1.

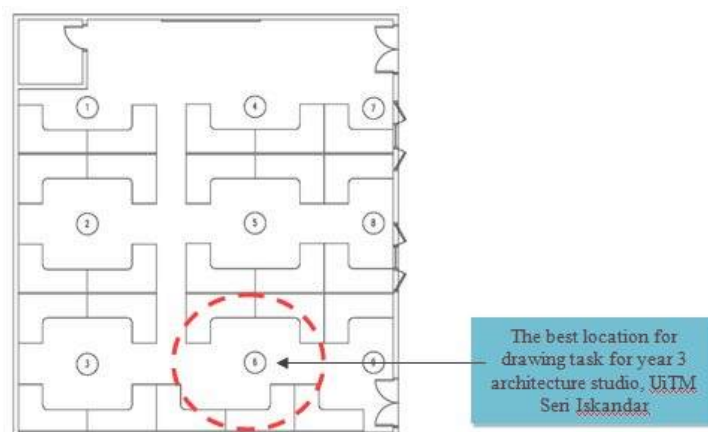


Figure 3.1 The Best Position in the Studio (Point 6)

Time	Location	Illuminations		Time	Illuminations		Time	Illuminations		Time	Illuminations	
		Day 1	Day 2		Day 1	Day 2		Day 1	Day 2		Day 1	Day 2
1400	Point 1	110	129	1600	131	139	1800	138	150	2000	130	133
	Point 2	313	305		245	252		230	240		241	248
	Point 3	245	250		216	227		236	237		215	217
	Point 4	253	266		217	237		235	235		219	238
	Point 5	315	326		287	297		274	283		268	270
	Point 6	395	386		315	313		336	340		300	353
	Point 7	240	257		229	239		179	180		150	150
	Point 8	421	423		453	468		274	290		165	169
	Point 9	253	260		238	257		250	253		240	257
1500	Point 1	129	132	1700	129	129	1900	146	150	2100	129	120
	Point 2	251	250		272	281		243	240		232	226
	Point 3	233	255		220	227		228	233		210	236
	Point 4	245	252		237	238		220	223		220	223
	Point 5	273	295		283	289		270	276		257	257
	Point 6	344	344		347	359		300	300		217	334
	Point 7	213	224		209	215		158	158		148	148
	Point 8	400	400		302	380		187	190		160	177
	Point 9	263	267		230	246		250	252		236	251

Table 1:Lighting data on day one and day two.

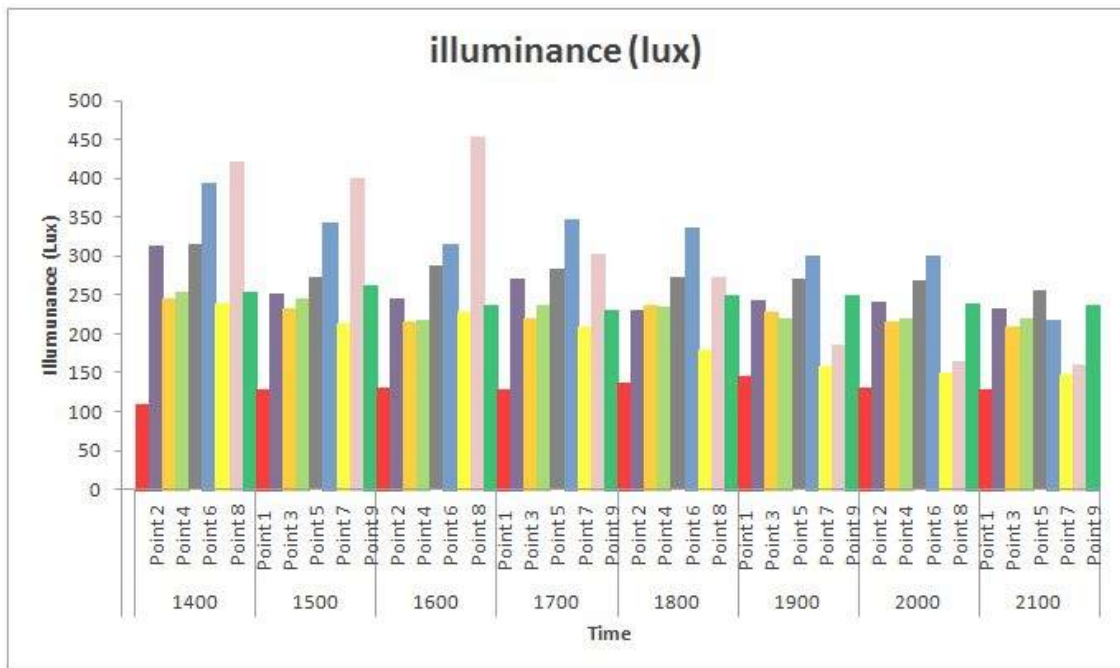


Figure 3.2.Illuminance in lux against time (Day 1)

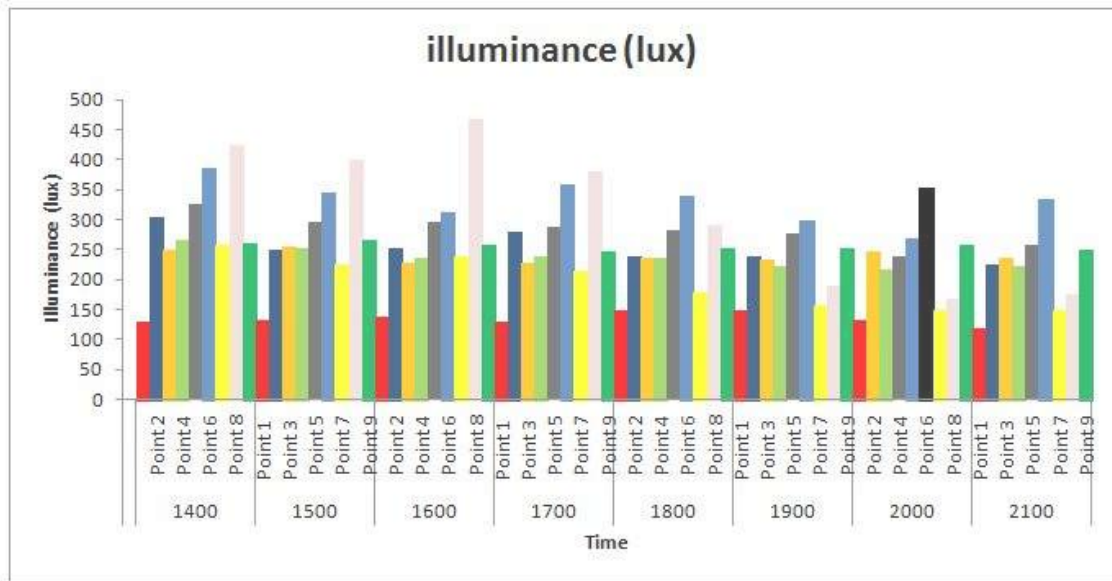


Figure 3.3 Illuminance in lux against time (Day 2)

3.2 Questionnaire Survey

Questionnaire was distributed to measure the level of studio occupancy, conducive and visual comfort. The three parameters were used to identify student perspective on studio environment quality. These three criteria evaluate student’s response whether current studio environment can instills critical thinking in order to produce better design project. Figure 3.4 shows from studio occupancy, most of the third year architecture student feel more comfortable to do their design drawings and assignments at home or hostel rather in the studio. Most of them find the studio is not very conducive and cozy to work with due to the internal layout and security purposes. Meanwhile, majority of the student feel the lighting level in the studio is acceptable and convenient.

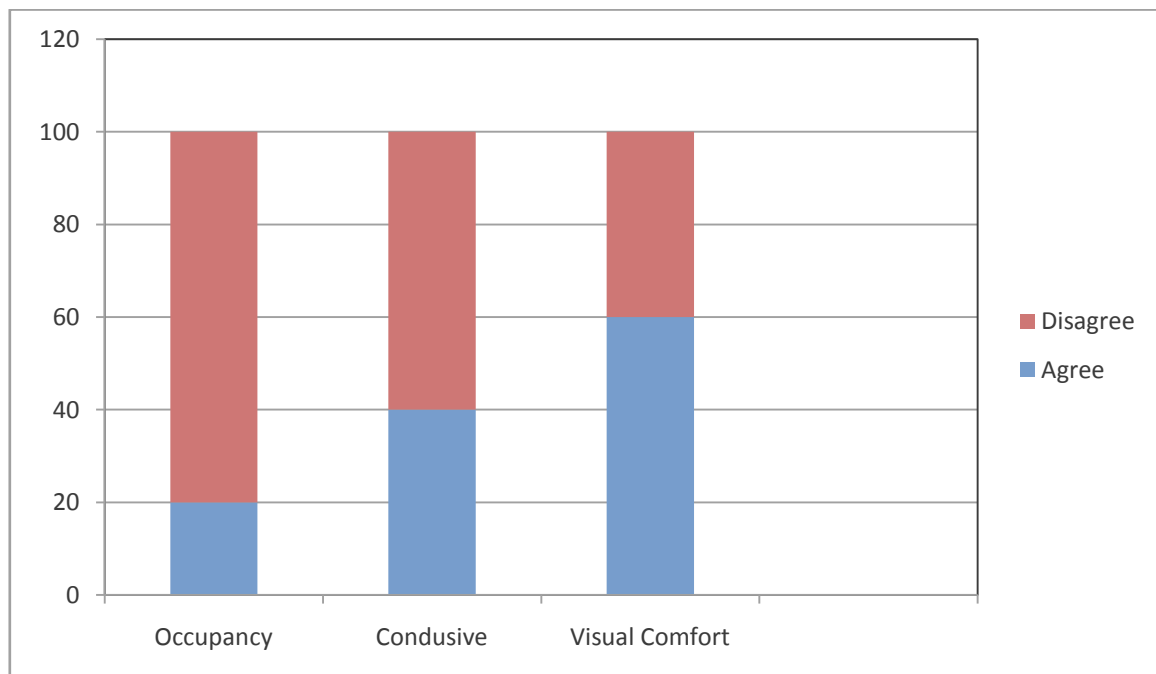


Figure 3.4 Questionnaire scores chart for third year architecture students

4.0 Conclusion and Recommendation

There is evidence that lighting is important in student's learning. From the research has shown that illuminance level in the architecture studio is insufficient and not in the range level as according to Malaysian:Standards 1525:2007. The finding shows that the lighting is not well-distributed to the whole studio. Most of the workstations in the studio are actually received insufficient amount of light which is not suitable for drafting task. According to the students responding, the current studio environment is not conducive and appears monotonous. Poor lighting may contribute to their lost of interest in working in the studio. The suitable lighting arrangement shall also be considered in designing future and upgrading current architecture studio. According to lumen method calculation, design of a uniform general lighting scheme in a space can determine the number of luminaires needed to realize the illuminance (lux) required in the room (P.Trengenze & D.Loe, 2004). This method can be applied only in square or rectangular rooms with a regular array of luminaires such as the current study of the architecture studio. With this method we can avoid lavishness and inadequacy in lighting design in the future.

5.0 References

- Arbuckle Industries (2014). Shigeru Ban, Archiculture: a documentary film that explores the architectural studio. Retrieved 04/02/2015, from <https://www.youtube.com/watch?v=62r3UPrOS9k>
- Brandi, U. , Brandi, C. G. (2001). *Lightbook, The Practice of Lighting Design*. Birkhauser.
- Bean, R. (2004). *Lighting Interior and Exterior*.Routledge Taylor & Francis Group.
- Che-Ani, A. I., Tawil, N. M., Musa, A. R., Yahaya, H., &Tahir, M. M. (2012). The architecture studio of UniversitiKebangsaan Malaysia (UKM): Has the indoor environmental quality standard been achieved? *Asian Social Science*, 8(16), 174–183.
- Egan, M. D. (1983). *Concepts in Lighting Architectural Lighting*.Mcgraw-Hill Book Company.
- Karlen, M. .Benya J.R. , Spangler C.(2012) Second Edition : *Lighting Design Basics*. Wiley.
- Malaysian Standard (MS) 1525: 2007 “Code of Practice on Energy Efficiency and Use of Renewable Energy for Non-Residential Building. Retrieved 11/02/2014, from <http://www.utm.my/energymanagement/files/2014/07/MS-1525-2007.pdf>
- Phipps-Nelson, J., Redman, J. R., Dijk, D.-J., &Rajaratnam, S. M. W. (2003). Daytime exposure to bright light, as compared to dim light, decreases sleepiness and improves psychomotor vigilance performance. *Sleep* (Vol. 26).
- Policy and Procedure for Accreditation of Architectural Programmes (2015), LembagaArkitek Malaysia. Retrieved 15/012/2014, from <http://www.lam.gov.my/accreditation/policy-procedure>
- Report of the RIBA visiting board to Universiti Teknologi MARA (UiTM) (Perak), Royal Institute of British Architects. Retrieved 15/04/2015, from <https://www.architecture.com/Files/RIBAProfessionalServices/Education/Validation/InternationalValidation/UITMPerakConfirmedReport-forpublication.pdf>
- Trengenze, P. ,Loe, D. (2004). *The Design of Lighting*.Spon Press Taylor & Francis Group.
- Veitch, J., &Geerts, J. (2005). Satisfaction with lighting in open-plan offices: COPE field findings. *Proceedings of Lux Europa 2005*, 414–417.
- Winterbottom, M., & Wilkins, A. (2009). Lighting and discomfort in the classroom. *Journal of Environmental Psychology*, 29(1), 63–75.
- Zhounghua Gou, Stephen Siu-Yu Lau &FengQian (2013) Comparison of mood and task performance in naturally lit and artificial lit environments. *Indoor and Built Environment* 24(1)27-36