

# What are titles and abstracts?

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# Things to discuss

- Title
- Abstract

## Learning Outcomes

1. To learn how to construct an abstract for a PhD thesis
2. To share knowledge of doing PhD with fellows PhD candidates.

# Title

- Clearly describe the contents of your research
- Independent and dependent variables
- Concise and accurate; snappy
- Comprise of major variables or subject
- Less than 15 words
- No subtitle

# Examples of UTM Thesis Titles

- Children's View of Friendly Environment in a Low Cost High Density Urban Neighbourhood

Research Aim: To determine the Malaysian children's view of friendly environment in urban neighbourhood.

- The Cultural Landscape Values of a Nupe Community in Nigeria

Research Aim: To determine the Nupe ethnic group values and perception associated with the transactions with their cultural landscape.

- New Microwave Based Transesterification Techniques for Biodiesel Production from Cultivated Microalgae

Research Aim: To improve the biomass and lipid content of microalgae during cultivation using LED lights of various wavelengths and intensities.

# Examples of Journal Paper Titles

## *Benchmarking electricity consumption (2006)*

- *The subject is benchmarking electricity consumption in building.*
- *Key indicator is kWh/m<sup>2</sup> usable floor area and year.*

## *Analyzing sunlight duration and optimum shading using a sky map (2007)*

- *The subject is predicting the sunlight duration on windows*
- *The method is using the hemispherical sky*

## *Children in the City: Reclaiming the Street (2006)*

- *The major variable of this paper is children who live in the city.*
- *The issue is to make the street as a place for children.*

# Longer Titles

## *Domestic Space Arrangement of the Private Rental Housing: A Case of Urban Village Housings of Yogyakarta, Indonesia (2005)*

- *The issue of the paper is space arrangement in rental houses.*
- *The author investigates a specific case of village houses in Yogyakarta.*

## *Landscape as Playspace: The Effects of Natural Environments on Children's Play and Motor Development (2005)*

- *Clearly, the subject is natural landscape as playspace for children.*
- *The issue is about what are the effects of playing in natural landscape on children's motor development.*

## Longer titles

*A Study on the History and Development of the Javanese Mosque Part 2: The Historical Setting and Role of the Javanese Mosque under the Sultanates (2005)*

- What is the subject?
- Where is the study is carried out?
- What is historical era?
- Why the paper is divided into two parts?

*Correlation between thermal conductivity and the thickness of selected insulation materials for building wall (2007)*

*Windows in the workplace: examining issues of environmental sustainability and occupant comfort in the selection of multi-glazed windows*

# Exercise on title

What are concerns of the following theses?

1. The Mediating Effect of Corporate Social Responsibility and Spirituality on Balanced Scorecard in Yemen's Private Universities
2. Adaptive Sliding Mode Control with Disturbance Observer for a Class of Electro-hydraulic Actuator System
3. A Computational Fluid Dynamic Framework for Modeling and Simulation of Proton Exchange Membrane Fuel Cell
4. Restorative Benefits of Paediatric Ward as a Play Environment in Nigerian Hospital
5. Empirical Mode Decomposition With Least Square Support Vector Machine Model For River Flow Forecasting
6. Preparation, Characterization and Mechanistic Study of Manganese and Cerium Oxide Based Catalysts For Catalytic Oxidative Desulfurization of Diesel Fuel
7. Optical Tweezer Induced by Microring Resonator

# Abstract

- An abstract is the prelude of your thesis. It is usually read first. It gives the general concern of your research. Therefore, make it accurate, specific, objective, and self-contained.
- The thesis abstract or summary is what will be read first, to give an indication of the parameters of the study, its depth and breadth, its context and the scholarly contribution it makes. It is important that it is written in a concise and focused manner so that it identifies the salient features of the research, the problem or research question, the approach adopted, and its findings. (Monash University)

# Abstract

## **Content**

1. Intent or objective of paper, Issue, Problem statement, Research Gap, Why it is important? (4-5 sentences)
2. Method(s) of study (3-4 sentences)
3. Results or Findings (5-6 sentences)
4. Conclusion (2-3 sentences)
5. Implications (1-2 sentences)

How many words? Generally, 300-350 words.

## Abstract

# AFFORDANCES OF SCHOOL GROUNDS FOR CHILDREN'S OUTDOOR PLAY AND ENVIRONMENTAL LEARNING

Nor Fadzila Aziz (2014)

Children's outdoor play in school grounds is a fundamental component of environmental learning because it creates meaningful, enduring environmental connections and increases children's performances. However, the extent of children's engagement in outdoor play and the way they can learn through play is strongly influenced by the physical and social contexts of school grounds. Adults, including the schools, have often overlooked the values of outdoor play for learning that takes place outside the classroom. Thus, many schools are designed without considering children's needs and desires. The spaces in schools are shaped with mediocre design standards and school grounds are not recognised as essential to a school's mission or curriculum. This study explores the factors that influence children's play behaviour patterns and the actualisation of affordances in school grounds, and the connection with children's conception of ideal school grounds for outdoor play and environmental learning. This study was conducted with children (n=80) and teachers (n=71) at two primary schools in Johor, Malaysia. Data on the children's behavioural and perceptual responses were elicited using five methods: walkabout interview and mapping, photography, drawing, preference survey and survey questionnaire. The data were analysed using descriptive statistics, Rasch Model, and spatial and content analysis. The results revealed different play behaviour patterns and preferences among children regarding the use of school grounds during non-formal and informal learning sessions. The differences that were identified were influenced by the degree of functionality, attractiveness, aesthetic quality, comfortability, accessibility and safety of the school grounds environments. The findings of the actualisation of affordances and children's conceptions of ideal school grounds suggest that children desire school grounds environments that meet their physical, communal, emotional and educational needs. These findings contribute to a better understanding of children's interaction with and perceptions of their school grounds environment, and highlight the importance of such environments in promoting outdoor play and environmental learning.

# Abstract

PALM OIL MILL EFFLUENT TREATMENT USING AEROBIC SUBMERGED MEMBRANE BIOREACTOR COUPLED WITH BIOFOULING REDUCERS

Adhi Yuniarto

The existing palm oil mill effluent (POME) treatment is often still difficult to adhere to the effluent standards. One of the most promising novel technologies in wastewater treatment system is the membrane bioreactor (MBR). The aim of this study is to treat POME using aerobic submerged membrane bioreactor (ASMBR) system to improve the effluent quality before biofouling reducer (BFR) is applied to reduce the membrane fouling. Diluted POME was treated with a 20 L lab-scale ASMBR equipped with a single microfiltration flat sheet membrane module. The ASMBR systems with mixed liquor suspended solids (MLSS) from 3000 to 12,000 mg L<sup>-1</sup> and solids retention time (SRT) from 20 days and above were used to investigate the best operating condition of the system without BFR. The finding shows ASMBR continuous system operated at MLSS of 9000 mg L<sup>-1</sup> and SRT of 20 days to produce good quality effluent, less microbial products, and moderate membrane fouling rate. Since membrane fouling is the main obstacle in the membrane system, powdered activated carbon (PAC), granulated activated carbon (GAC) and zeolite (ZEO) were added to the ASMBR as BFR. Batch tests with BFR concentrations from 1 to 10 g L<sup>-1</sup> were used to determine the best BFR dose. It can be concluded that 4 g L<sup>-1</sup> of PAC, GAC, and ZEO is the best BFR dose to produce good residual organic contents and colour of final products. Furthermore, the performance of ASMBR without BFR (called BFR0) and coupled with BFR were compared by assessing the removal efficiencies of organic and colour, the fouling phenomenon propensity, and the critical flux (J<sub>c</sub>) enhancement. The systems were subjected to two batches of organic loading rate (OLR), equal to about 1000 and 3000 mg COD L<sup>-1</sup>. Each system with BFR showed distinct performances by producing higher effluent quality as compared with BFR0. On both OLR, the ASMBR systems with BFR removed organic constituents with more than 96%, produced effluent with average residual colour of less than 55 ADMI and significantly increased J<sub>c</sub> up to 42 L m<sup>-2</sup> h<sup>-1</sup>. It can be concluded that PAC is the best BFR for ASMBR system to treat POME by producing the highest quality of effluent, distinct changes in the concentrations of soluble microbial products (SMP) and extracellular polymeric substances (EPS), formed lowest operational trans-membrane pressure (TMP), and produced highest J<sub>c</sub>. Finally, the experimental results were verified using activated sludge models no. 1 (ASM1) by also conducting the COD fractionation and respirometric analysis. The stoichiometry and kinetic parameters were determined to describe the bioprocess of the system. The COD fractionation of POME indicated dominant fraction of slowly biodegradable matters (42-56%). Oxygen utilization rate (OUR) of the ASMBR systems was found to fit well with ASM1 results. Compared with BFR0, the addition of BFR increased the stoichiometry parameter of Y<sub>H</sub> up to 0.49 mg cell COD mg<sup>-1</sup> COD, increased the kinetic parameters of μ<sub>maxH</sub>, and μ<sub>maxA</sub> up to 1.6 and 0.48 d<sup>-1</sup>, respectively, and increased K<sub>O,H</sub> and K<sub>O,A</sub> up to 0.59 and 0.82 mg COD L<sup>-1</sup>, respectively. The value of b<sub>H</sub> and K<sub>S</sub> were decreased to 0.32 d<sup>-1</sup> and 0.89 mg COD L<sup>-1</sup>, respectively. These sets of model parameters were verified describing the enhancement of bioprocess in the ASMBR system coupled with BFR.

# Exercise on abstract

- Analyze the abstract in the form of purpose, problem statement, method, analysis, findings, conclusion and implication.

# IMPROVED TOTAL SITE HEAT INTEGRATION INCORPORATING PRESSURE DROP AND PROCESS MODIFICATIONS

Chew Kew Hong

Heat Integration (HI) has been a well-established energy conservation strategy in the industry. Total Site Heat Integration (TSHI) has received growing interest since its inception in the 90's due to the ample energy saving potential available from TSHI implementation. This study assesses the TSHI methodology for industrial implementation and extended the TSHI methodology to (a) incorporate pressure drop, (b) maximise energy saving and (c) reduce capital cost of heat transfer area. A detailed assessment of the current TSHI methodology for industrial implementation has identified five key issues influencing the TSHI solution: (1) design, (2) operations, (3) reliability/availability/maintenance (RAM), (4) regulatory/policy and (5) economics. By considering these issues in the early stages, practical TSHI solutions can be obtained. This assessment has provided a direction for future extension of TSHI methodology from the industrial perspective. This work has also extended the TSHI methodology to consider pressure drop, one of the key design issues for Total Site (TS) due to large distances between plants. Pressure drop reduces the amount of steam that can be raised from the Site Source and changes the profile of hot utilities at the various levels. The utility circulation pumps have to be designed for a higher discharge head to overcome the frictional and elevation head loss in the distribution network. Consideration of pressure drop leads to an increase of about 4 % to both the heating and cooling utility requirements and significantly change the hot utilities profile between -75 % and +54 %. The improved methodology provides a more realistic basis for the design of central utility systems and the utility circulation pumps. The second and third extended TSHI methodologies complement the individual process analysis by bringing it within the TS context. The second methodology adapts the Plus-Minus Principle and applied it to TS. It identifies the options to maximise energy savings on site using the Total Site Profiles (TSP), the Utility Grand Composite Curve and a new set of heuristics. With the proposed process modifications, a case study performed demonstrated that a potential saving of 9 % in overall heating and 7 % in cooling utilities can be achieved. The third methodology adapts the Keep-Hot-Stream-Hot and Keep-Cold-Stream-Cold Principles to TS. Together with the TSP, the expanded TS Problem-Table-Algorithm and a comprehensive set of heuristics, the TSP is favourably changed to provide a larger temperature driving force to reduce the capital cost of the heat transfer units. The proposed modifications resulted in a modest reduction of heating and cooling utilities of between 1 % and 4 %, respectively and a more noticeable capital cost saving of about 9 %. These two methodologies enable the plant designers/engineers to pinpoint process modification efforts to improve site HI. The proposed changes to the process/streams should be assessed from feasibility, practicality and economic perspectives.

## REBUILDING IDENTITY OF HISTORICAL AREA IN PALEMBANG THROUGH THE USE OF URBAN MORPHOLOGY

Widya Fransiska Febrarti Anuar (2013)

Urban development and changing life style of locals is inevitable. These phenomena challenge the uniqueness of the old area due to destruction of the elements and city identity. This research questioned on how the morphology of urban elements can be utilized to rebuild the identity of a river city. It is aimed to identify the morphology of riverside settlement in Palembang to rebuild the city's identity by investigating on how place character can establish the identity of city, identifying the physical and spatial patterns of Musi riverside settlement and investigating the interdependency between urban morphology and identity. A mixed-method approach was derived from the disciplines of urban morphology and environmental psychology. This approach was used to examine the people-place relationship and the morphology change at Musi riverside settlement. For people-place relationship, a total of 144 residents participated in the survey, 25 residents were interviewed and a total of 152 old photos were used. For urban morphology, the research used four maps of year 1875, 1920, 1945 and 2004. The findings reveal an understanding on the relationships between identity and urban morphology by showing (1) the influence of the river and the tributaries in creating the city's structure as well as its identity, (2) the role of place attachment and sense of place in encouraging the persistency of identity, and (3) the interdependency between urban morphology and identity. The major findings suggest that the people's cultural activity is the key element to create a strong identity of a place. In turn, it leads to a strong place identity. Thus, the old urban elements that accommodate the cultural activities should be protected, preserved or conserved. This study provides a new framework to assist urban planners, architects and policy makers in determining the appropriate actions in redeveloping the old area in the city.

# Examples of Good Abstract

- <http://fab.utm.my/ismail/phd-students/>