الجامعة الاسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

INTERNATIONAL CONFERENCE ON ARCHITECTURE & BUILT ENVIRONMENT

Redefining the Concept of Islamic Architecture and Built Environment

7th & 8th November 2013
KAED, IIUM & Putrajaya

CONFERENCE PROCEEDING

SECTION A

** Please note that this section is not based on the conference program but on the date of submission of each paper.

International Conference on Architecture and Built Environment 2013 (ICABE2013)
International Islamic University Malaysia, Kuala Lumpur
7th – 8th November, 2013

RECONSTITUTING THE CONCEPTS OF SUSTAINABLE STORMWATER MANAGEMENT

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ABSTRACT

Even though various sustainable storm water managements are available, there is less clear discussion and classification of its concepts. Besides, little discussion on the relationship of the concepts with the hydrology cycle made the implementation of storm water management less successful in managing the problem caused by storm water such as flash flood and water pollution. Hence, this research aims to review the concepts of sustainable storm water management. Two objectives formulated are (i) to identify the concepts of sustainable stormwater management, and (ii)to identify any relationship of the identified concepts with other factors in sustainable storm water management. Online journal, forum discussion and e-mail interview were used as methods of data collection in this qualitative research. Six steps of descriptive comparative analysis were used to analyse the data. Consequently, the researcher had identified 11 concepts and listed the concepts in priority order. The 11 concepts are conservation of watershed, compact urban form, retain stormwater on site, treatment train, green network, harvest and reuse rainwater, redevelopment, streetscape ecosystem and restoration. The identified concepts were listed in priority order based on relationship with 7 hydrology cycles which are interception, infiltration, surface runoff, depression storage, evapotranspiration, groundwater flow and interflow. The concepts were analysed with hydrology cycles is because to ensure the sustainability factors in outlining the concepts to manage the storm water.

Keywords: Stormwater management, concepts, hydrology cycle, sustainable

INTRODUCTION

Stormwater is an excessive amount of surface runoff. Stormwater occurs when rate of interception and infiltration of rainfall is decrease and rate of volume and speed of surface runoff is increased (Ahmad Sanusi Hussin, 2005; Marsh, 2005; Day & Dickinson, 2008).The changes in interception, infiltration and surface runoff are examples of changes in hydrology cycles in urban environment where pervious covers were changed to impervious cover. Clearance of vegetation covers and flattens of landform and developed into impervious cover such as buildings, roads, parking lots, solid pavements and storm sewers caused large discharge of stormwater with high frequencies especially during heavy precipitation. High discharge of stormwater reduces the capacity of river to contain the mass volume of stormwater in a short period of precipitation. Consequently, stormwater causes an overflow of river and flood the nearby area (Chia Chong Wing, 2004; Ahmad Sanusi Hussin, 2005; Marsh, 2005; Day & Dickinson, 2008).

In order to overcome the flooding issue caused by stormwater, structural conveyance approach are used for stormwater management(Chia Chong Wing, 2004).Conventional practice of structural conveyance for stormwater management involved increasing the number of concrete drainage and river modification such as broadening, deepening, straighten, structured and diversion. However, the structural conveyance approach have been identified as not sustainable in terms of ineffective in flood mitigation occurrence, high cost of construction and maintenance and unfriendly to the user and the environment (Department of Irrigation and Drainage, n.d.).In addition, environmental problems like erosion of riverbanks, decrease of water quality and

degradation of river habitat also happen because of mass structured drainage and concreted river network (Marsh, 2005).

As an alternative to conveyance approach, there are other sustainable storm water management approaches to reduce the storm water volume and speed rate and simultaneously increase interception coverage of precipitation and infiltration rate of rainfall into the soil (Department of Irrigation and Drainage, n.d.). The approaches come with various terms such as Sustainable Urban Drainage Systems (SUDS), Low-Impact Development (LID) and Water Sensitive Urban Design (WSUD). All the sustainable stormwater management approaches have similar aim which is to replicate the natural hydrology cycle into site design. The approach is based on source control mitigation concept. The concept used is to reduce quantity of storm water by increasing the interception of rainfall through vegetation cover and increase the infiltration rate of rain water into the soil. The source control concept focuses on how to use and integrate landscape elements with stormwater management strategies. The benefits of source control concept in sustainable stormwater management are less cost of construction and maintenance, aesthetic enhancement of urban image, rehabilitation of the urban ecosystem, robustness in use of space and user friendly (DID, n.d.).

The difference between structural conveyance approach and sustainable storm water management approach is the concept applied. Based on the dissimilarity concept of storm water management, this research sets out to reconstitute the concept in sustainable storm water management to provide an alternative sustainable storm water management.

The research questions raised in this research are "What are the concepts of sustainable storm water management?" and "Are there any relationships of the identified concepts with other factors in sustainable storm water management?"The aim of research is to review the concepts of sustainable storm water management. To achieve the aim, two research objectives have been formulated which are (i) to identify the concepts of sustainable stormwater management, and (ii) to identify any relationship of the identified concepts with other factors in sustainable stormwater management.

LITERATURE REVIEW

Since the research focuses on stormwater, it is related to landscape design because stormwater management is about how the landscape is being design to manage the hydrology cycles. Therefore, it is vital to define landscape design. Few authors may use different terms such as landscape architecture, ecological planning and ecosystem design. Thus, other terms that relate and merely similar to landscape design will be reviewed for better definition.

The Penguin Dictionary of Architecture and Landscape Architecture defined landscape architecture as the art and science of creating open-air spaces as environments for human life. Whereas, Lyle (1999) who used the term ecosystem design suggests that to make the landscape design, landscape architect needs to have scientific knowledge of natural ecosystems. Steiner (2008) stated that ecological planning is the use of biophysical and socio-cultural information to suggest opportunities and constraints for decision making of landscape development. Meanwhile, McHarg (1995) argued that ecological planning is the understanding of biophysical and social process in an ecosystem through the operation of laws and time. The ecosystem is defined as an assemblage of interaction between living and non-living system in a landscape. Lyle (1999) also

suggested that scientific knowledge of ecosystem design can be further divided into two. First is a fact or data about the landscape. It is important before designing a landscape to know the biological process, this is the import and export of energy and materials and biophysical elements involved in the process. Second is the concept of design. In landscape design, concept is crucial because it provides access to the mechanisms that join all of the facts. It offers a basis in constructing theories of ecosystem design to understand the scientific knowledge of landscape and its processes. Therefore, concept can be considered as general ideas and principles in stormwater management. Meanwhile, the landscape ecosystem needs to be studied first before designing the stormwater management is the hydrology cycle. It is also important to study the biophysical elements involved in the hydrology cycle.

Marsh (2005) argued, the vital to identify the hydrology cycle is to acknowledge that in landscape, hydrology features are an interrelated with other biophysical elements like topography, soils, and vegetation. In a natural landscape, hydrology cycle is the inflow and outflow continuous processes in its various forms in the air, on land and in the sea (Ferguson, 1998; Steiner, 2008). It represents the sequences movement of water in landscape by different phases and forms. The scientific knowledge gain from this literature will use as sustainability factors for the identified concepts.
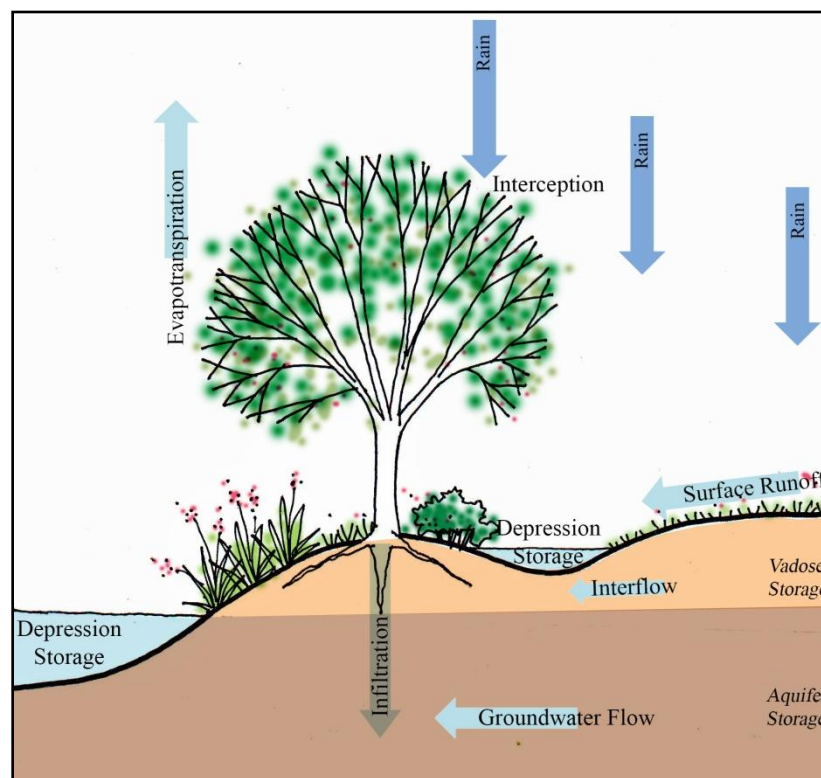

Figure 1 *Revised Hydrology Cycle*
(**Source:***Modified from Ferguson, 1998; Marsh, 2005; Steiner, 2008)*

Meanwhile, Table 1 shows the summary of hydrology cycle and interrelated biophysical elements involved in the hydrology cycle.

Table 1 *Hydrology Cycle and Its Interrelated Biophysical Elements*

Hydrology Cycle	Biophysical Element Involved	Process
1. Interception	1. Vegetation (strata of trees, shrubs & groundcovers)	Interception & evapotranspiration.

2. Infiltration	1. Surface of landscape;
	   1.1. Soil
	      (types, permeability & saturation)
	   1.2. Vegetation.
		Infiltration & absorption through permeability of soil & by root systems of vegetation.

3. Surface runoff	1. Topography and slope.
	2. Surface roughness;
	   2.1. Vegetation.
	   2.2. Soil type.
	3. Water bodies
	   (pond, lake, wetland & river)
		Surface runoff flow into the lower area.

4. Depression storage	1. Topography (landscape depression) 2. Water bodies (pond, lake, wetland & river)	Collected within micro-topography & water bodies.
5. Evapotranspiration	1. Vegetation. 2. Water bodies (pond, lake, wetland & river)	Evapotranspiration; holding & retain the water & slowly evaporate to the air.
6. Groundwater flow	1. Soil (types, permeability & saturation)	Infiltration & absorption. Slowly discharge into streams through aquifer storage layer in the ground.
7. Interflow	1. Soil (types, permeability and saturation).	Infiltration and absorption. Slowly discharge into streams through vadose storage layer in the ground.

(**Source:** *Ferguson, 1998; Marsh, 2005; Steiner, 2008)*

The hydrology cycle and its biophysical elements will be used as the basis concept in landscape design of stormwater management in this research.

Four models of sustainable stormwater management which are (i) Stormwater Management Strategies, (ii) Low Impact Development, (iii) Water Sensitive Urban Design, and (iv) Sustainable Urban Drainage Systems were reviewed to identify the concepts used in the sustainable stormwater management. Table 2 shows the summary of identified concepts.

Table 2 *Concepts of Sustainable Stormwater Management*

Model of Sustainable Stormwater Management	Characteristics of Concept
1. Stormwater Management Strategies	1. Store and releasingstormwater slowly through evapotranspiration and infiltration over a long time. 2. Return the stormwater into the ground. 3. Direct to a holding basin and releasing it slowly. 4. Infiltrate stormwater into the ground. 5. Locate development on site with good hydrologic performance. 6. Avoid impervious surface wherever possible. 7. Balance density ratios between developed land and open space. 8. Increase travel time of stormwater through longer and slower route. 9. Increase surface roughness to slow the movement of stormwater. 10. Disconnect impervious surface from a drainage system to reduce flow continuity of stormwater. 11. Utilize grading and planting design to slow stormwater and enhance infiltration.
2. Low Impact Development	Manages rainfall on-site by attempting to integrate control into site and building design by creating condition for the rainwater to infiltrate into the soil. Apply distributed source-control approach designed to treat and manage runoff at the source by five concepts which are conservation and minimization, conveyance, storage, infiltration and landscaping.
3. Water Sensitive Urban Design	1. Minimizing impervious areas. 2. Minimizing use of formal drainage systems. 3. Encouraging infiltration (where appropriate) 4. Encouraging stormwater reuse.
4. Sustainable Urban Drainage Systems	1. Dealing with runoff in the locality of the rainfall. 2. Managing potential flooding at its source in the present and in the future. 3. Protecting water resources from point pollution and diffuse pollution.

(**Source:***Australian and New Zealand Environment and Conservation Council, 2000;*
Construction Industry Research and Information Association (CIRIA), 2001;Hager, 2003;
Marsh, 2005;Toronto and Region Conservation, 2010)

In summary, as stated by Lyle (1999), the concept of sustainable storm water management should be outlined based on hydrology cycle. This is because sustainable storm water management is about how the hydrology cycle within a landscape is sustainably designed. Hence, the hydrology cycle and its biophysical elements will be used as the basis concept in landscape design of storm water management in this research.

METHODOLOGY

Qualitative approach was used for this research based on three elements of inquiry identified based from Creswell (2003). Firstly, constructivism was used as alternative knowledge claims. Constructivism is defined as assumptions identified in the research where the researcher seek for the complexity of views into few categories or ideas in understanding a process. Constructivism is suitable to answer the research questions and objectives of research because researcher can identify the formation process of concepts in sustainable stormwater management. Secondly, grounded theory was used as strategy of inquiry. Grounded theory is suitable for the research questions and objectives because grounded theory is defined as an attempt to derive a general and abstract theory of a process or interaction grounded based upon the data collected from participants in the research (Charmaz, 1994; Glaser & Strauss, 1999; Merriam, 2002; Creswell, 2003; Hunter & Kelly; 2008). The collected data from the participants will be used to identify the concepts of sustainable stormwater management. Lastly, Google group forum discussion, e-mail interview and documents were used as methods of research.

Google group forum discussion from http://groups.google.com/group/rainwater-in-context was used as a semi-structured forum discussion platform. 112 professionals in stormwater and hydrology management have joined the Google group. 4 respondents had replied the topic posted and 8 attached links of documents were given by the respondents. To overcome the lack of respond, researcher had reviewed 20 topics related to concepts of sustainable stormwater management.

Moreover, 578 structured e-mail interviews were sent to professionals and academicians in stormwater and hydrology management industry in Malaysia, United States of America, United Kingdom, Australia and Japan askingabout the concept in sustainable stormwater management. 8 responds were received with 13 documents were attached for references.

In addition, online journals from http://www.stormh2o.com were reviewed from issue January 2007 until May 2012 for documents method. 35 topics of online journals which related to concepts of stormwater management were reviewed.

Lastly, in analyzing the collected data, there are six sequential steps of data based from Creswell (2003) (Figure 2).
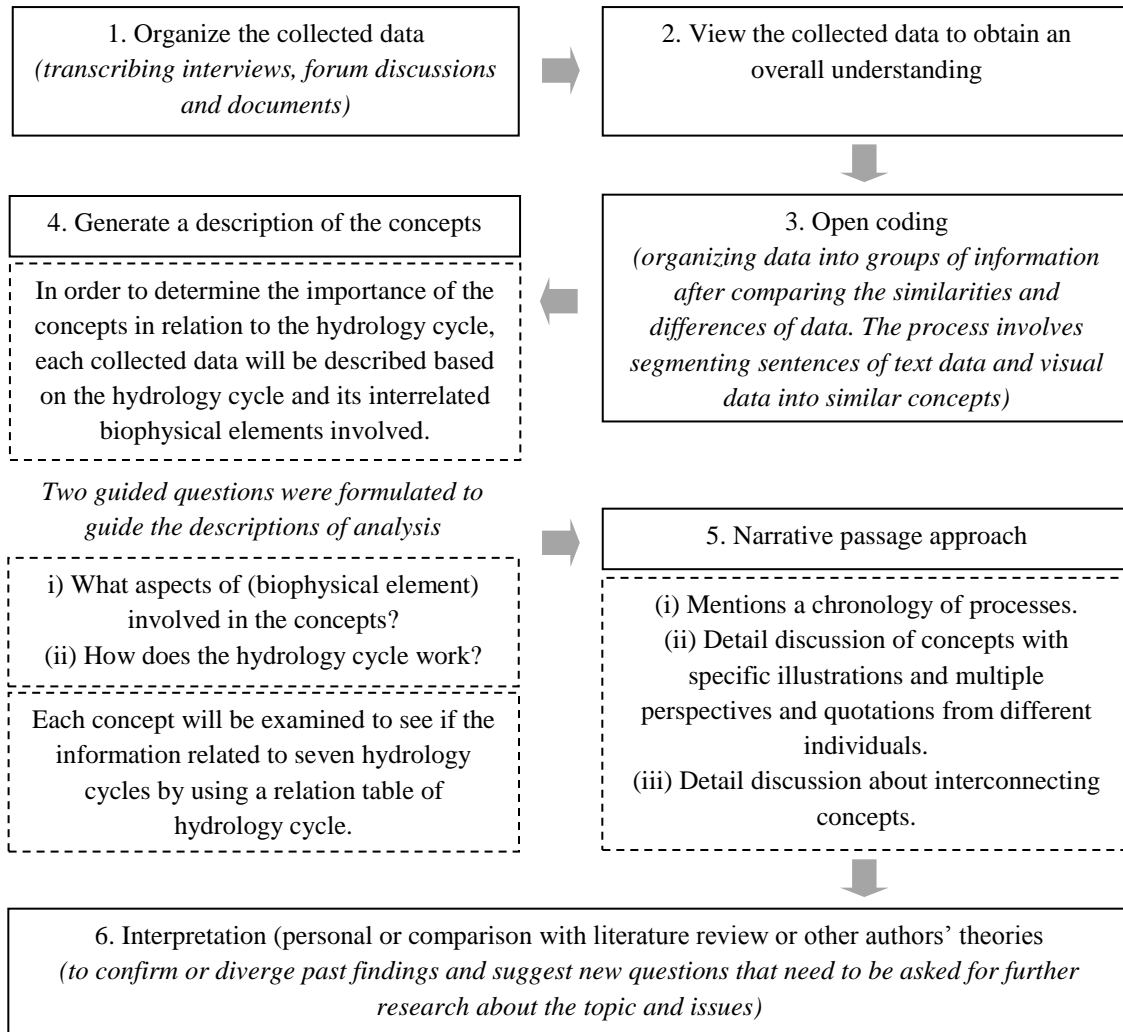
1. Organize the collected data *(transcribing interviews, forum discussions and documents)*	→	2. View the collected data to obtain an overall understanding

4. Generate a description of the concepts	←	3. Open coding *(organizing data into groups of information after comparing the similarities and differences of data. The process involves segmenting sentences of text data and visual data into similar concepts)*

4. Generate a description of the concepts

In order to determine the importance of the concepts in relation to the hydrology cycle, each collected data will be described based on the hydrology cycle and its interrelated biophysical elements involved.

Two guided questions were formulated to guide the descriptions of analysis

i) What aspects of (biophysical element) involved in the concepts?
(ii) How does the hydrology cycle work?

Each concept will be examined to see if the information related to seven hydrology cycles by using a relation table of hydrology cycle.

5. Narrative passage approach

(i) Mentions a chronology of processes.
(ii) Detail discussion of concepts with specific illustrations and multiple perspectives and quotations from different individuals.
(iii) Detail discussion about interconnecting concepts.

6. Interpretation (personal or comparison with literature review or other authors' theories *(to confirm or diverge past findings and suggest new questions that need to be asked for further research about the topic and issues)*

Figure 2 *Six steps of analysis processes (based from Creswell, 2003)*

RESULT

A total of 11 concepts had been identified after the analysis process. First is conservation of watershed. Based on the analysis of conservation of the watershed, it is clear that this concept is fully related to all the hydrology cycle and the biophysical elements involved in the cycle. This is because there are no changes or alteration made onto the biophysical elements within the conserved watershed which allow the hydrology cycle to function at its optimum level especially to filter stormwater from nearby development as highlighted by Richards (2011).Comparison between analysis and literature review reveals that conservation of the watershed should be the priority concept in stormwater management. In literature review, Toronto and Region Conservation (2010) has listed preservation of important hydrologic features and functions like stream buffers as its first site design concept. It also has listed to use existing natural systems as the integrating framework for planning as a first key principle in Low Impact Development.

Existing natural systems can be referred as conserved water bodies' ecosystem. Table 3 summarizes the relation of hydrology cycle with conservation of the watershed. The table shows that conservation of watershed fulfils all the hydrology cycle which are interception, infiltration, surface runoff, depression storage, evapotranspiration, interflow and groundwater flow. All the biophysical elements of plants, soil, water bodies and topography which are conserved can optimally function in hydrology cycle.

Table 3 *Relation of Hydrology Cycle with Conservation of Watershed*

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
Conservation of watershed							

Second concept identified is harvest and reuse rainwater. Comparison between analysis data and literature review indicates that rainwater should be harvested and reuse as a resource as stated by Crabtree (2011) and by Hager (2003) as in the literature review. Even though Australian and New Zealand Environment and Conservation Council (2000) also suggested to capture and reuse of rainwater, but they are using the word stormwater, not rainwater. The researcher argued to use the word rainwater than using the word stormwater because it is more accurate to its condition. Rainwater shows that the rain is collected in a rain barrel. Meanwhile, stormwater refers to excessive surface runoff flowing towards the lowest point of landform such as drainage system and water bodies. Harvest and reuse of rainwater concept shows that it relates to six hydrology cycles which are interception, infiltration, surface runoff, depression storage, evapotranspiration and groundwater flow (Table 4).In harvest and reuse rainwater concept, the interception refers to directing rainwater into a rain barrel to be stored. The infiltration, surface runoff, depression storage, evapotranspiration and groundwater flow refer to reuse of harvested rainwater for irrigation on planting or landscaping.

Table 4 *Relation of Hydrology Cycle with Harvest and Reuse Rainwater*

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
Harvest and reuse rainwater							

Third concept is compact urban form. Compact urban form is a concept of stormwater management at planning level. Compact urban form is a combination of (i) preservation of natural environment and (ii) designing a compact form or layout of a city, and (iii) high density of population and infrastructure. Relation of compact urban form and the hydrology cycle involve all seven cycles which are interception, infiltration, surface runoff, depression storage,

evapotranspiration, interflow and groundwater flow (Table 5). The reason researcher stated that is because compact urban form starts with conservation or preservation of open or green spaces and critical ecological water bodies' ecosystem. Thus, these conserved green spaces can act as a cleaning or filtering the polluted stormwater or waste water from nearby compact development and high-density population. From the analysis of finding, Smart growth planning flowchart as suggested by Aurbach (2010) can be improved with statements from Dumont (2011) about the need to design multi-use green strategies or system and from Nisenson (2011) on the need to plan a mixed-use development of commercial, institutional and residential and to plan a mix-transit network (Figure 3). These concepts are important to ensure the sustainability of compact urban form with high-density population.

> 1. Preservation of critical ecological areas like riparian corridors, stream buffers, flood plains and wetlands and open spaces as niche areas to absorb and filter stormwater.
>
> 2. Use smart growth strategies like high density and compact development to preserve land.
>
> 3. Apply mixed-use land use development and mix-transit network through infill, retrofit and redevelopment of existing site.
>
> 4. Design multi-use green systems of rainwater management strategies

Figure 3 Revised Smart Growth Planning Flowchart based from Aurbach (2010), Dumont (2011) and Nisenson (2011)

Table 5 Relation of Hydrology Cycle with Compact Urban Form

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
Compact urban form							

The fourth concept is redevelopment. Redevelopment, infill or retrofit is a concept to achieve compact urban form and high density population. In the analysis, multifunctional of stormwater management concept is highlighted by EPA-NOAA Smart Growth Implementation Assistance for Coastal Communities for Sussex County, Deleware (2009) and Ferguson (2004).

The relation of redevelopment and the hydrology cycle involve six cycles which are interception, infiltration, surface runoff, depression storage, evapotranspiration and groundwater flow (Table 6). Interflow cycle is not included because as discussed by Stephens and Dumont (2011) argued that interflow can easily loss due to removal of vadose storage layer of soil through construction works like insertion of pipe and digging of ditches. Since redevelopment focuses on an already developed area, the vadose storage for interflow had lost. As said by Stephens and Dumont (2011) that once the vadose storage layer had lost, there is no means to restore it. Thus, redevelopment projects can only restore interception, infiltration, surface runoff, depression storage, evapotranspiration and groundwater flow cycles.

Table 6 *Relation of Hydrology Cycle with Redevelopment*

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
Redevelopment	▨	▨	▨	▨	▨		▨

The fifth concept is retain stormwater on site. Comparison between analysis data and literature review shows that retain stormwater on site has been stated by many authors. In literature review, Marsh (2005) highlighted to store stormwater on site and releasing it slowly over a long time, to return the stormwater into the ground and to use storage basin strategy. In addition, Hager (2003) urged the need for storage, infiltration and landscaping concepts of Low Impact Development to create subsurface storage and to create basin and rain garden. Moreover, Australian and New Zealand Environment and Conservation Council (2000) stated in Water Sensitive Urban Design's secondary level treatment through sedimentation and filtration by using filter strip, grass swale, extended detention (dry) basin, infiltration trench and infiltration basin. It also stated in tertiary level treatment through sedimentation, filtration and adsorption by using pond and wetland. Lastly, Construction Industry Research and Information Association (CIRIA) (2001) in Sustainable Urban Drainage System (SUDS) stated the usage of the basin and pond techniques to retain stormwater. Relation to retain stormwater on site and hydrology cycle involve four cycles which are infiltration, depression storage, evapotranspiration and groundwater flow. This is based on the arguments by Briglio (2011), Horner (2011) and Ferguson (2002) about the evapotranspiration, depression storage and infiltration cycles involved through retain stormwater on site concept. Meanwhile, Ferguson (2002), Rutherford (2007) and Low (2011) had highlighted the groundwater flow cycle involved through retain stormwater on site concept. Through this concept, the infiltration cycle happens through the roots of plants and soil. Depression storage is caused by the lower depression of landform. Evapotranspiration cycle is through plants and the groundwater flow cycle is through the roots of plants and soil.However, researcher argued to add interception and surface runoff cycles because retains stormwater on site concept usually using plants as part of its concept. Thus, the foliage of plants will intercept some of the stormwater flowing into a retention area. Meanwhile, surface runoff also involved as it is a process of directing the stormwater into the retention area. However, for interflow cycle, researcher categorized it into two situations. The first situation is where interflow cycle is not

involved as the retention area for stormwater is a developed landscape. In developed landscape, Stephens and Dumont (2011) argued that interflow can easily loss due to removal of vadose storage layer of soil through construction works like insertion of pipe and digging of ditches. The second situation is where interflow cycle is involved as the retention area is a natural landscape. This is based on Briglio (2011), from the analysis data discussed above. Briglio (2011) stated that the retention area for stormwater can be both developed landscape and the natural landscape. In a natural landscape, the interflow cycle can happen because the vendor storage layer is still conserved. The above discussion about the relation of hydrology cycle with the concept of retain stormwater on site is summarized in Table 7.

Table 7 *Relation of Hydrology Cycle with Retain Stormwater on Site*

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
(a) Retain stormwater on site (with conservation of natural water bodies ecosystem like wetland)							
(b) Retain stormwater on site (without conservation of natural water bodies ecosystem)							

Sixth concept is treatment train. Comparison between analysis data and literature review shows that the treatment train has been stated by many authors. The researcher found out that the terminology of "treatment train" and "retain stormwater on site" lead to similar definition. This is based on the definition of a treatment train by Low (2011), "treatment train is a method of integrating several of strategies or tools for various functions such as paving, channelling, storage and filtration that collectively manage the rainwater." The strategies in treatment train concept are similar to retain stormwater on site concept. Although, Broughton (2012) had argued to divide the site into two classifications which are (i) upper stream or highest point of the site and (ii) downstream or lowest point of site. Moreover, Broughton (2012) said that source control strategies are crucial within the upper stream area. In literature review, Marsh (2005) highlighted about the source control strategy to manage stormwater. In addition, Toronto and Region Conservation (2010) stated in one of the Low Impact Development's key principle is to treat stormwater as close to the source area as possible. Relation of treatment train and hydrology cycle involves seven hydrology cycles which are interception, infiltration, surface runoff, depression storage, evapotranspiration, interflow and groundwater flow. This is based on the arguments by Low (2011) that all seven hydrology cycles happen through collective strategies like paving, channelling, storage and filtration. Through this concept, the infiltration, interflow and groundwater flow cycles happen through the roots of plants and soil. Surface runoff cycle flowing into a lower point from the highest point of landform. Depression storage is caused by the lower depression of landform. Lastly, interception and evapotranspiration cycles are through plants.Besides, the researcher had classified the relation of a treatment train with hydrology cycle

into two classifications (Table 8). The classification involved discrepancy of interflow cycle. First classification is where interflow cycle is not involved as the area within the treatment train concept is a developed landscape without any natural landscape. In developed landscape, Stephens and Dumont (2011) argued that interflow can easily loss due to removal of vadose storage layer of soil through construction works like insertion of pipe and digging of ditches. Second classification is where interflow cycle is involved as the area within the treatment train concept has a natural landscape. This is based from Broughton (2012) urged to conserve a natural environment of site for the downstream treatment train. As discussed before, in natural landscape, the interflow cycle can happen because the vadose storage layer is still conserved.

Table 8 *Relation of Hydrology Cycle with Treatment Train*

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
(a) Treatment train (with conservation of natural water bodies ecosystem like wetland)							
(b) Treatment train (without conservation of natural water bodies ecosystem)							

The seventh concept is streetscape ecosystem. The Streetscape ecosystem concept is a combination of green infrastructure strategies integrated with the street and its component like median and traffic circles. Comparison between analysis data and literature review shows similarity in terms of the combination of discussing concept for streetscape ecosystem. Concepts like reducing the amount of impervious cover, retain stormwater on site and harvest and reuse of rainwater had been discussed in the analysis and literature review. The difference between analysis data and literature review is defining the street as a concept for ecological ecosystem through a combination of green infrastructure strategies. The relation of streetscape ecosystem with hydrology cycle involves six cycles of interception, infiltration, surface runoff, depression storage, evapotranspiration and groundwater flow (Table 9). Interception and evapotranspiration cycle happens through plant communities. Surface runoff and depression storage cycles happen through topography and slope. Lastly, infiltration and groundwater flow cycles happen through soil and plant roots.Meanwhile, interflow cycle cannot occur because streetscape ecosystem covers the street which is within the developed area. Based on the argument by Stephens and Dumont (2011), in developed landscape, interflow is loss due to removal of vadose storage layer of soil through construction works like insertion of pipe and digging of ditches.

Table 9 *Relation of Hydrology Cycle with Streetscape Ecosystem*

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
Streetscape Ecosystem							

The next concept is restoration. Restoration concept is about restoring the normal state and condition of biophysical elements like topography and slope, vegetation, soil and water bodies for the hydrology cycle to function. There are similarities between analysis data and literature review in terms of the concept of treatment, infiltration, storage and conveyance. In literature review, Marsh (2005) underlined the storage concept through storage basin strategy and infiltration and treatment through source control concept. In addition, Hager (2003) highlighted the conveyance, storage and infiltration in Low Impact Development concepts. Meanwhile, the Australian and New Zealand Environment and Conservation Council (2010) emphasized three levels of treatment concepts of Water Sensitive Urban Design. Primary level treatment is targeting litter and other gross pollutants and coarse sediments. Second level is targeting sedimentary and primary removal of nutrients and bacteria. Third level of treatment is removing nutrients, bacteria, fine sediments and heavy metals. Lastly, Construction Industry Research and Information Association (CIRIA) (2001) identified infiltration and treatment concepts through permeable and filter drain and infiltration devices.

Meanwhile, storage can be done through basins and ponds. Lastly, conveyance can be done through filter strips and swales. Relation of restoration concept to hydrology cycle involves six cycles of interception, infiltration, surface runoff, depression storage, evapotranspiration and groundwater flow (Table 10). Interception and evapotranspiration cycle happens through plant communities. Surface runoff and depression storage cycles happen through topography and slope. Lastly, infiltration and groundwater flow cycles happen through soil and plant roots.Meanwhile, interflow cycle cannot occur because restoration is within the developed area. Based on the argument by Stephens and Dumont (2011), in developed landscape, interflow is loss due to removal of vadose storage layer of soil through construction works like insertion of pipe and digging of ditches.

Table 10 *Relation* of Hydrology Cycle with Restoration

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
Restoration							

The subsequent concept is green network. The Green network concept is about the conservation and restoration of interconnected functioning hydrologic areas. The interconnected or network of green spaces which is to ensure the optimum level of stormwater and water quality treatment for a healthy hydrology cycle. Relation of the green network with hydrology cycle involve seven cycles which are interception, infiltration, surface runoff, depression storage, evapotranspiration, interflow and groundwater flow (Table 11). All hydrology cycles can function based on this concept is because the conservation of critical ecological areas likes wetlands, riparian corridors and flood plains where all the biophysical elements are intact for optimum biological functions especially the hydrology cycles. It is also contributed by the restoration of brownfield and greyfield into green spaces and parks which also function as natural environment in terms of the hydrology cycle except for the interflow cycle. This is based from Stephens and Dumont (2011), in developed landscape, interflow is loss due to removal of vadose storage layer of soil through construction works like insertion of pipe and digging of ditches.

Table 11 *Relation of Hydrology Cycle with Green Network*

Concept	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
Green network							

Lastly, the identified concepts were listed according to priority order. The priority order was based on the highest number of each concept is related to the hydrology cycle. Table 12 shows the summary of concepts of sustainable stormwater management with the relationship to hydrology cycle.

Table 12 *Relationship of Hydrology Cycles with the Concepts of Sustainable Stormwater Management*

Concept	Hydrology cycle	Interception	Infiltration	Surface runoff	Depression storage	Evapotranspiration	Interflow	Groundwater flow
1. Conservation of watershed	Relation							
2. Compact urban form								
3. Retain stormwater on site (with conservation of natural water bodies ecosystem like wetland)								
4. Treatment train (with conservation of natural water								

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Concept								
bodies ecosystem like wetland)								
5. Green network								
6. Harvest and reuse rainwater								
7. Redevelopment								
8. Retain stormwater on site (without conservation of natural water bodies ecosystem)								
9. Treatment train (without conservation of natural water bodies ecosystem)								
10. Streetscape ecosystem								
11. Restoration								

Legend:	
	Similar concepts with yellow colour code but with the present of natural / undisturbed biophysical elements
	Similar concepts with green colour code but without the present of natural / undisturbed biophysical elements (retrofit, restored, man-made)
	The concepts have a relation with the hydrology cycle
White colour in the column of hydrology cycle	The concepts do not have a relation with the hydrology cycle

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, concepts in stormwater management according to Lyle (1999) can be considered as general ideas and principles. The concept is crucial because it provides access to the mechanisms that join all of the facts of the environmental scientific knowledge which are the hydrology cycle and its biophysical elements. Therefore, the scientific knowledge of landscape and its processes is a basis in outlining the conceptsin sustainable stormwater management. There are 11 concepts identified where two similar concepts (refer to Table 11, number 3 is similar to number 8 and number 4 is similar to number 9) but has a different in terms the presence of natural or undisturbed natural water bodies ecosystem and without the presence of natural or undisturbed natural water body's ecosystem. The concepts with the present of natural or undisturbed natural water bodies' ecosystem were coded with green color and the concepts without the presence of natural or undisturbed natural water bodies' ecosystem were coded with yellow color. Those differences were found out by the researcher and listed in table form is crucial as it gives a new insight in classification of concepts in sustainable stormwater management. This is because the green color code which represents the presence of natural and undisturbed biophysical elements stressed the importance of conservation of natural biophysical elements to ensure the optimum level of hydrology cycle functions. Whereas, similar concepts and strategies which are without the presence of natural biophysical elements (man-made or restored) have a deficiency in certain hydrology cycles. The deficiency was examined and related to seven hydrology cycles and coded by white color. The identified 11 concepts were identified their relationship with the hydrology cycles and its biophysical elements to ensure the concepts

comply with the aim of sustainable stormwater management and comply with the research questions and research objectives. In addition, the identified concepts were listed according to priority order based on the highest number of blue colour coded which relates the concepts and strategies with seven hydrology cycle (interception, infiltration, surface runoff, depression storage, evapotranspiration, groundwater flow and interflow). Researcher urges that the priority order listing is important to identify which concept and strategies should be focused and to give a clear classification and information in decision making in sustainable stormwater management.

There are 3 recommendations identified from the finding. Firstly, identification and classification of concepts in sustainable stormwater management at the local level need to be done. Local level means that the classification and identification of concepts are based on the scientific information of local's ecosystem and site condition. In the identification and classification process, involvement of professionals with hydrology and environment background is important. The most crucial part in the classification process is not the availability of scientific knowledge, but on how to relate and connect the available of various scientific knowledge from different professional backgrounds into a consensus classification of the concepts. Moreover, local manual and guideline of stormwater management that is based on local's ecosystem information is important to ensure the most suitable concepts can be conducted to optimize the success of concepts and to minimize the failure of the concepts used. Then, the local manual or guideline of stormwater management can be written and shared with practitioners. Secondly, it is important to raise the importance of sustainable stormwater management and to implement it. In raising the importance, it is essential to illustrate the importance of sustainable stormwater management as a cycle where it involves the (i) awareness of sustainable stormwater management among practitioners, (ii) need to implement the sustainable stormwater management in every development, (iii) getting feedback from practitioners for future improvement as the practitioners are aware about any failure of implemented stormwater management, and (iv) revision of sustainable stormwater management over time by local authority in improving any deficiency. Lastly, to improve the concepts of sustainable stormwater management, researcher found out that there are two scopes of research are crucial to be studied. First is the challenge to outline conceptof sustainable stormwatermanagement in a compact built up urban area. Hence, a study on how to integrate the concept with the impervious surface (buildings and roads) is important. Present green infrastructures like green roof, green wall and porous pavement are a good start to tackle the less availability space challenge. Second scope of research is on how to outline concepts which are economical, ecological-oriented and user-friendly. This is because the majority of present concepts do not comply with all three sustainability components especially on economic and user-friendly aspects.

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International Islamic University Malaysia, Kuala Lumpur
7th – 8th November, 2013

DISASTER MANAGEMENT AND FAITH-BASED ORGANIZATIONS, AN ISLAMIC PERSPECTIVE

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ABSTRACT

Regarding its complexity which overwhelms the capacity of the affecting community to cope with, disaster is increasingly recognizing the necessity to ultimate response drawing on an extensive variety of skills and manpower. It requires collaboration between various serving services including government, private sector, local communities and faith-based organizations due to limited available recourses. The purpose of this paper is to address the richness of Islamic teaching in disaster management in order to improve the Islamic based organizations' participation in reducing the impacts during disaster situations. Data were collected through journals, articles, reports and documents analysis. Therefore, several investigations have been reviewed. The paper introduces an overview of disaster management, act of god, view of Islam on disaster management, and faith-based organizations contribution in disaster management. It has been found that Islamic basedorganizations usually have advantage and great potential to offer immediate assistance in disaster events and to involve in long-time recovery operations when outside agencies return back home.

Keywords: disaster, disaster management, view of Islam, faith-based organizations.

INTRODUCTION

In old civilizations disaster was a part and parcel of religious traditions, for a longtime people believed that gods broughtwealth and destruction. Human knowledge of floods, earthquakes, storms and eruptions was too rare to allow them understand those events properly. They proposedthat dominant and random powers stand behind their sufferings. Thus, each natural disaster has its proper god (Ashtiany, 2009). In Egyptian old civilization, people thought in Nile River as a gift fromgods.Ancient CentralAmericans believed that the earth has a square shape stands on four gods. Greeks believed that the volcano which destroyed Atlantis was a punishment of its people's arrogance. Roman thought in *Vulcan*, the god of fire is responsible of volcanic eruptions (Barale et al, n.d.). In Islam, a perception that disaster would be an outcome of Allah's judgment to areas of large immorality limited the reaction to such events (KIN, 2006). However, there is no evidence in Hadith that disaster is a result of Allah's wrath on people's disbelief or unfaithfulness. Hence, when talking about Act of god people neglect the scientific reason which proposes that severe damages and losses in life and assets are criminal negligence and points out that human awareness can save lives (Ashtiany, 2009).

Disasters are managed with a shared responsibility of local, organizational, political, professional, local and faith-based sector, the work to overwhelm a disaster consists four phases : preparedness, mitigation, response and recovery, this is what we call: disaster management cycle (Lee et al, 2012). Besides, It is requested to raise the awareness between individuals, governments, local and faith-based communities about the damages caused by disasters in order

to cope properly with them (Taohidul Islam and Chik, 2011). This paper addresses the Islamic perspective in disaster management in order to improve the faith-based communities' participation to minimize the losses of lives and assets during disaster situations. Also, it is to show up what Islam mentioned about disaster management and what we should do to cope with such events.

METHODOLOGY

The paper presents the Islamic perspective in disasters and explains the misunderstandings regarding the fatalism and Allah's will, as well as considers what Islam said about preparing for such events. This paper also addresses the participation of Islamic-based organizations in disaster management and its involvement in offering different response and relief services to the affected societies.

ISLAM AND DISASTERS

In general, all studies have common agreement that disasters are extreme environmental events which occur suddenly and affect large areas and bring severe damages of lives, property or natural environment and severely affect the local activities of a community (Perry and Quarantelli, 2005; Baharin et al, 2009; Cutter, 2001) or one of its parts (Lindell, 2011) in both predictable and unpredictable ways (A. Rahman, 2012). Hence, Natural and man-made disasters occur every day, the impact of crises differs in scale from "9.11", SARS, and Tsunami and so forth. The world is not only facing natural disasters and major accidents such as earthquakes, fires, hurricanes, explosions, volcano eruptions, and epidemics, but also from socio-technical and technological failures (Richardson, 1994), and socio-economical disasters such as pollution, poverty, and terrorism attacks.

The issue of disasters and human miseries is an unsolved subject in science and religion. Several questions arise at every disaster occurrence about the real causes of the disaster and the responsible for its happening (Dildar, n.d.). Besides, People have different opinions regarding these events. A part of them considers what happens as a chance, where others believe that disasters are God's will and judgment (Zaheer, 2012). In this context, a significant amount of literature has been published on disasters in Islam. Therefore, it is increasingly requested to change the attitude of traditional societies concerning the perception that disasters are God's wrath (Ashtiany, 2009). In this part, the author reviewed some literature and highlighted some key concepts about disasters, god's wrath and view of Islam on such events.

Ashtiany (2009) discusses the view of Islam on disasters specifically on earthquake risk reduction; he argues the need to a new approach to clarify the traditional belief that disasters are Allah's will or expression of Allah's wrath. In this regard, Raele (2010) cited:
" *Many religious leaders encourage us to think of disasters not as events that can be avoided through mitigation and preparedness, but as a kind of divine retribution. Another speaker at the Parliament forum, Pakistani academic Hafiz Aziz urRehman, explained that, in the aftermath of the 2005 Kashmir earthquake, many Islamic leaders interpreted the disaster as punishment from God*".

However, many reviewers in Islamic newspapers argue that the last tsunami (2004) which hits large zones in Southeast Asia was Allah's judgment against places with great immorality. Hence, some Islamic governors and clerics agree with Allah's judgment on the touched countries for their immorality; they think about what happened as a test for devoted people and a penalty for the unjust ones. Probably, this was the reason that the richest nations and bodies in the Muslim world were amongst the lowest donors of support to their afflicted brothers and sisters in tsunami, 2004 (UAE $20 Million, Kuwait $2 million, Qatar $10 million, and Saudi Arabia $10 million) (KIN, 2006).

Overall, Quran cites many natural disasters by name, such as rajfah (earthquake) (29:37), (101:01), tufan (flood) (29:14), and hasib (violent tornado) (54:34).These disasters were addressed to specific folks in specific eras and can be used to highlight the events of the end of world and the Day of Judgment as well (Solihu, 2007). Prophet Muhammad (PBUH) said "*The Hour (Last Day) will not be established until (religious) knowledge will be taken away (by the death of religious learned men), earthquakes will be very frequent, time will pass quickly, afflictions will appear, murders will increase and money will overflow amongst you*". Further, Zaheer (2012) highlights the perspective of Quran and Sunnah for natural disasters interpretation and he arrives at three important arguments; punishment of Allah for people with disbelief or great immorality, warning for offenders, and a test of devotees. Solihu (2007) introduces a framework to understand specific disasters such as earthquakes, cyclones, and floods based on the perspective of Quran. Therefore, alike to other beliefs, Islam affords answers stand on hope and inspiration, not wrath and punishment. Muslims believe in Allah "The Just" does not penalize huge number of innocent people for the immorality of a few (Ahmed Rehab, 2005). The Qur'an does not state that disasters happen because of Allah's wrath (Dildar, n.d.). Instead, Quran is rich of passages (*Ayat*) which demonstrate at first that Allah always send a messenger to a mankind to show them the straight path and to warn them of their sin, Allah said inSurat Al-'A`rāf (07:35): "*O children of Adam, if there come to you messengers from among you relating to you My verses, then whoever fears Allah and reforms - there will be no fear concerning them, nor will they grieve*". Thus, the act of god is not arbitrary, it occurs only if those people intentionally neglected and rejected their messengers, then divine punishment will take place as an expression of their evil, this is stated in Qur'an at several places such as in Surat Al-'Isrā' (17:15):

"*Whoever is guided is only guided for [the benefit of] his soul. And whoever errs only errs against it. And no bearer of burdens will bear the burden of another. And never would we punish until we sent a messenger*"andSurat Al-Qaşaş (28:59): "*And never would your Lord have destroyed the cities until He had sent to their mother a messenger reciting to them our verses. And we would not destroy the cities except while their people were wrongdoers*".

It is important also to mention that the divine chastisement always distinguishes between the followers and the opposites of Allah's messenger (Dildar, n.d.). Several stories cited in the holy Quran describe that Allah never destroy virtuous person, which is confirmed in Surat Al-'An`ām (06:47):

"*Say, Have you considered: if the punishment of Allah should come to you unexpectedly or manifestly, will any be destroyed but the wrongdoing people*?".However, opponents got punished, for example in SuratHūd (11:94): "*And when our command came, we saved Shu'ayb*

and those who believed with him, by mercy from us. And the shriek seized those who had wronged, and they became within their homes [corpses] fallen prone".

Knowledge serves human beings and makes his life easier. However, beyond the advance of science and technology nowadays human felt able to master the nature. Many disasters clearly show how human and technology are weakin front of the nature. In addition, technological disasters, similar to natural disasters, happen without prior warning. Kobe. Japan.1995 for example, witnessed a large subsidence due to a 6.9 scale earthquake. Structures designed to resist such events have collapsed in few seconds in spite of the advanced technology in earthquake technology (see Photo.1)(Yahia, 2006).Alternatively, Social disasters and backwardness in all aspects of life will obviously appear when a society starts to diverge from the divine moral values to corruption, discrimination and offensiveness. It is explained in Quran in many places such as in SuratAr-Rūm:

"*Corruption has appeared throughout the land and sea by [reason of] what the hands ofpeople have earned so He may let them taste part of [the consequence of] what they have done that perhaps they will return [to righteousness]*".

It is important to mention that the Arabic word "fasaad "means corruption, encompass all kinds of community-based and environmental issues (Dildar, n.d.).

Photo.1 *Kobe.Japan earthquake (1995).*

ISLAM AND DISASTER MANAGEMENT

Disasters come suddenly, swiftly and inevitably. Thus, the occurrence of such disasters is likely to be an ultimate test to any community ability to effectively cope with. It is possible therefore, to reduce the impacts of natural hazards through an efficient disaster management, while technological disasters can be avoided or eliminated through good engineering design, optimized operation, periodic maintenance and continuous inspection activities (A. Rahman, 2012. Baharin et al, 2009). Disaster management process encompasses many tasks including: preparedness, mitigation, response and recovery.

Muslims believe in Qadha-o-Qadr. However, humans have to prepare and find a way to avoid such events and to do whatever possible to reduce the losses in human and assets and to prevent the possible disasters from happening. Quran and Hadith provide many ways on how to deal with disasters. Overall, in this part the researcher cited some reported events and examples

in Quran and Sunnah which provide teachings in coping with disasters and doing the best in order to minimize the losses of lives and proprieties.

Among the clearest examples of protection during disasters is what recited about the story of Prophet Noah (PBUH), Allah said in Surat Al-Mu'minūn (23:27): "*So We inspired to him, "Construct the ship under Our observation, and Our inspiration, and when Our command comes and the oven overflows, put into the ship from each [creature] two mates and your family, except those for whom the decree [of destruction] has proceeded. And do not address me concerning those who have wronged; indeed, they are to be drowned*". This reflects a good engineering design for safety during disaster situations and the importance of disaster preparedness in reducing the loss in lives and properties when disasters take place (Ashtiany, 2009). Besides, following the story of prophet Yusuf (Josef), Allah narrated these eventsin SuratYūsuf (12:46) thus: [He said], *"Joseph, O man of truth, explain to us about seven fat cows eaten by seven [that were] lean, and seven green spikes [of grain] and others [that were] dry - that I may return to the people; perhaps they will know [about you]."*Josef interpreted the dream to him, that there will be seven wealth coming years with an exceeded harvestif the land was correctly cultivated: [Joseph] said, "*You will plant for seven years consecutively; and what you harvest leave in its spikes, except a little from which you will eat*" (Quran 12:47). The crop should be stored. After this, there will be seven years of famine during this period the exceed crop would be used, *Then will come after that seven difficult [years] which will consume what you saved for them, except a little from which you will store*." (Quran 12:48). Josef also recommend that people during the famine period to keep some grain for the next seeding.As the drought come, all Egypt's surrounding areas was affected, Joseph prepared for the famine period during the seven years of good harvest, the disaster was well-managed as there is enough gain to feed the affected people. Another story of how to prevent social disasters (Terrorism and wars) is what Allah narrate about *Dhul-Qarnayn* in Surat Al Kahf (18:94):" *They said, "O Dhul-Qarnayn, indeed Gog and Magog are [great] corrupters in the land. So may we assign for you an expenditure that you might make between us and them a barrier?*" and "*So Gog and Magogwere unable to pass over it, nor were they able [to effect] in it any penetration*". Therefore, what recited in Surat An-Naml (18:27) "*Until, when they came upon the valley of the ants, an ant said, "O ants, enter your dwellings that you not be crushed by Solomon and his soldiers while they perceive not."* reflects to avoiding a disaster.

On the other hand, Takaful is the Islamic way to protect the financial losses due to disasters (insurance). According to Muhammad Ayub (n.d.):" Takaful is not a new concept in Islamic commercial law. The contemporary jurists acknowledge that the foundation of shared responsibility or Takaful was laid down in the system of 'Aaqilah', which was an arrangement of mutual help or indemnification customary in some tribes at the time of the Holy Prophet (PBUH). In case of any natural calamity, everybody used to contribute something until the loss was indemnified". In addition, Quran and Sunnah have expressed the approaches to cope with disasters and catastrophes. These approaches according to Zaheer (2012) include:

1. Piety: Allah resolve peoples' difficulties and bless them when they become pious and devout, this is outlined in Surat Al-'A`rāf (7:96):" *And if only the people of the cities had believed and feared Allah, We would have opened upon them blessings from the heaven and the earth; but they denied [the messengers], so We seized them for what they were earning*."

2. Repentance: Allah forgive people and remove their nuisance when they regret and repent. It is explained in Surat Al-'Anfāl (8:33):" But Allah would not punish them while you, [O Muhammad], are among them, and Allah would not punish them while they seek forgiveness".

3. Patience: it is important to mention that patience is worthy for those are being tested by Allah, they will be prized if they show patience in face of disasters. This is described in Quran in Surat Al-Baqarah (2:155-157):" *And We will surely test you with something of fear and hunger and a loss of wealth and lives and fruits, but give good tidings to the patient, Who, when disaster strikes them, say, "Indeed we belong to Allah, and indeed to Him we will return.", Those are the ones upon whom are blessings from their Lord and mercy. And it is those who are the [rightly] guided*".

ISLAMIC BASED ORGANIZATIONS IN DISASTER MANAGEMENT

Many post-disaster studies clearly showed that people often use religion to handle a disaster especially when victims search for comfort and hope to return their lives back to normalcy (KIN, 2006). However, Faith-based organizations work together with local and governmental agencies to assist people in need and respond effectively to various disasters. FBOs encompass any organization, agency, or project that offers human relief services and stands on integrated belief concept; it takes advantage in disaster response due to its skills that are not incorporated formally in disaster management plans (Pant et al, 2008). Therefore, faith-based activities marked a new generation of integrated and increased partnership between government and local communities which usually religiously linked (Sinha, 2012). They provide a large amount of services in addition to accommodation and sheltering (Bielefeld and Cleveland, 2013). FBOs become a major player in international community for disaster response (Ferris, 2005). In the US for example, FBOs are playing an important role in social programs and they received a special support from the federal government since January 2001; the government was grateful for the capacity of FBOs to make quick decisions to help the local community after hurricane Katrina (Pant et al, 2008). Also, the decision makers become more aware by the role which world's NGOs play in offering help during and after disasters (Ian Smillie and Larry Minear (cited from Ferris, 2005)). Hence, it is observed that FBOs work in transparency, less bureaucracy, with available and diverse staff from different backgrounds and professions (Pant et al, 2008). In this regard, FBOs become more attached to governments through partnerships, collaborations and funding provisions (Bielefeld and Cleveland, 2013), in many countries NGOs are more active thangovernments, they have a whole relief programmes with large fund and they carry more reliability among the donors than governmental agencies (Ferris, 2005). Therefore, members of faith-based agencies frequently benefit some cultural acceptance among locals which is sometimes not importantduring disasters such as in Afghanistan for example; where there is a doubt of non-Muslim relief members. Instead, *Islamic relief worldwide* has a reason to take place in relief activities nearby Kandahar; some other Christian NGOs impelled to employ local afghan Muslim such as NGOs TEAR Australia (Raele, 2010).

Donating (Taba'ro'e) for people in need, involving in social activities, and cooperating with others in all aspects of life are highly valued acts in Islam (KIN, 2006); (Taba'ro'e) is a kind of donation given to support the fellow in need. In this context Allah said in Surat Al-Ĥashr (59:09): "*And [also for] those who were settled in al-Madinah and [adopted] the faith before*

them. They love those who emigrated to them and find not any want in their breasts of what the emigrants were given but give [them] preference over themselves, even though they are in privation. And whoever is protected from the stinginess of his soul - it is those who will be the successful". Also, Mohammed (PBUH) stated: "*Whosoever alleviates the difficulties of a needy person who cannot pay his debt Allah will alleviate his difficulties in both this world and the Hereafter*" (Badi, 2002).

Muslims across the globe collected more than 1$ billion for victims of hurricane Katrina, Gulf oil-rich countries people were generous by donation and prayers for victims. Mosques as well as others religions' temples and churches in the US involved in collecting donations and funds to assist the victims of earthquakes (Rehab, 2005). However, except in UK, Islamic charities have faced several obstacles especially after 9/11; western governments suspect that they can be used to cover terrorist activities. Switzerland for example, took steps against *bona fide* Islamic charities (Benthall, 2008).

In Islamic countries, the local religious people often take advantage in disaster situations. Imams, Islamic associations and charity communities are largely accepted to offer aid and to handle relief activities. They have a great potential to help in disaster situations; they are integrated in the local society, speak the same dialect and recognize the local traditions. They can absolutely profit from the weekly religious meeting on Friday prayer (*Salat al-Jomoaa*) to collect fund and manpower to cope with disasters. They can also open mosques as a shelter for homeless or for giving food (Raele, 2010) as a Muslim's duty toward his Muslim brothers. In this regard prophet Mohammed (PBUH) said: "*The example of the Muslims in their love and mercy for each other is like the body. If one part is afflicted, all the other parts rally to its aid with fever and sleeplessness*". Moreover, Islamic localorganizations involved in disaster management are available at the scene of disaster to ensure quick response, and help the community to return back to normal situations even better than governments after outside NGOs and international agencies return back home (Raele, 2010, Benthall, 2008).

Rahman(cited from Raele, 2010) acknowledges this point at the parliament forum regarding Kashmir earthquake: "*it was local Islamic NGOs and volunteers from across the faith community that came to the aid of victims, speeding up the response process significantly*". However, the same thing doesn't happen in Aceh during tsunami, 2004. Muhammadiyah, an Islamic reformist and social organization of 30 million bodies in Indonesia couldn't get the necessary funding to apply its projects of reconstruction and recovery in Aceh. Therefore, there is no accredited Islamic based organization by USAID to offer post-disaster assistance in Indonesia (Raele, 2010, Benthall, 2008) regardless of the US government initiative to tender religious leaders (Ratcliffe 2007: 53-4cited from Benthall, 2008).

CONCLUSION

It is obvious. However, to change the perception that disasters are Allah's wrath in order to improve the communities' involvement in disaster management. Muslim is encouraged to do whatever possible to prevent the potential disasters from happening and also to do the best to minimize the losses in lives and properties if these disasters take place. Benthall (2008) states: "*It must also remain a matter for speculation how powerful a force in the humanitarian movement the Islamic charities might become if they were encouraged to develop their potential as a*

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vehicle for redistribution of resources and disaster response and preparedness in the Muslim world". He also cited what an informant told him that the equality of all the mankind in Islam makes a different good impression:" *It is good to see Islamic Relief's expats praying and fasting with the people and the brotherhood spirit during Ramadan. People stand shoulder to shoulder to pray and the driver may be the prayer leader, with the head of mission behind him*".

In this paper,the researcher introduced an overview of what Islam said about disasters, clarified the misconception regarding the occurrence of such disasters, and presenting the perspective of Islam in disaster management. Besides, this paper discussed some issues of Islamic organizations' involvement in disaster management. However, In order to improve the participation of Islamic communities in disaster management, Islamic FBOs should integrated in the whole disaster management policy which encompasses all phases of disaster management.

NOTES

1- Holy Qur'an: Sahih international English translation, by Amatullah J. Bantley, Umm Muhammad, AminahAssami, Mary M. Kennedy, available at:http://quran.com/.
2- The researcher used the Arabic interpretations of the holy Quran verses (*Ayat*) retrieved fromhttp://ar.islamway.net/.

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ROLE OF THE *MASJID* IN DISASTER MANAGEMENT: PRELIMINARY INVESTIGATION OF EVIDENCES FROM ASIA

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ABSTRACT

The *Masjid* (Mosque in English) has historically played a vital role in the spiritual, moral and social upliftment of the Muslim community. Nevertheless, the role of the *masjid* has remained largely undocumented, and unrecognised in the development and disaster studies. Although the role of the *masjid* in disaster situations in many Muslim countries is evident, very little study has been undertaken to document its role as a development agent. Hence, investigating the potential of the *masjid* in disaster situation is an effort to describe and explore the functions and roles of a mosque in responding to a disaster. It has been remarked that the *masjid* has the potential to play a role in disaster management in early warning systems, as an information centre, an evacuation site and even with contingency planning. The role of the *masjid* during emergency response has received appreciation from the victims and the community. However, the potential has not yet been fully explored. Therefore, the main purpose of this paper is to explore and document the role the *masjid* has played in disaster management in various Asian countries and based on it develop a model of the potential role, the mosque can play in building the community resilience for disaster management in the Muslim countries.

Keywords: *Masjid*, Disaster management, Community resilience, Muslim countries, Contingency planning, Evacuation.

INTRODUCTION

The *Masjid* is not only a physical edifice, it is also a community-based religious institution which historically has been a focal point where political, social and religious activities are organized for the community. *Masjid* allows Muslims to perform their personal, social and cultural responsibilities and provides a scope to perform their solidarity duties to society. In many Muslim countries, during natural disasters *masjid* played important roles in collecting charity in the form of money and goods, organizing the community or as a place of refuge among others. In a nutshell, *masjid* has historically played a vital role in the spiritual, moral and social upliftment

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of the Muslim community. Nevertheless, the role of the *masjid* has remained largely undocumented, underestimated and overshadowed in the development and disaster studies literature (Cheema, 2012). Therefore, this paper intends to investigate and document the role the *masjid* has played in the disaster management in various Asian countries and based on it develop a model of the potential role, the *masjid* can play in building the community resilience for disaster management in the Muslim countries.

THEORETICAL PERSPECTIVE

The theoretical perspective of the present study is based on the relationship between faith-based religious institutions and development, and disaster management.

RELIGION AND DEVELOPMENT

Development studies have traditionally neglected the role of religion. The relationship between religion and development has changed overtime. In pre-modernism era, it was thought that religion and development are not conducive. With the advent of modernism, which is based on the philosophy of reason and the supremacy of science, religion was viewed as anti-developmental. The modernisation theory with its explicit goal of economic growth, was believed to go hand in hand with secularism; modern rational values would replace 'traditional' (therefore assumed as backward) world-views and beliefs (Lunn, 2009, p.939). From this perspective religion was seen as an impediment to economic advancement, irrelevant for modern societies and something that would fade away in time. In post-modernism era, there has been revival in the interest and role of religion in development through three dimensions – religious organisations, religious values and religious world-views. The following remarks indicate the relevant context-

"Both modernist and Marxist viewpoints which have influenced theory, policy and practice over the past 60 years strongly determined the neglect of religion in Western-driven development. However, despite their assumptions that it would fade away or become irrelevant over time, religion has continued to be a significant and in some cases strngthening factor across all continents. This cannot be ignored in the present or future development theory, policy and practice" (Lunn, 2009, p.947)

RELIGION AND DM/ DRR

Despite the fact that the integrative approach to disasters has attempted to consider social, cultural and economic factors since the 1980s, the role of religious institutions remains over shadowed and underestimated in the disaster studies literature along with the role of religion itself (Candland, 2000; Chester, 2005). Although often ignored in the development and disaster studies literature, religious institutions have been contributing to different phases of disasters including response, recovery and rehabilitation at the local level, where religion has significant influence in shaping perceptions of vulnerable communities (Chester et al., 2008). During times of disasters, religious institutions contribute to the disaster mitigation drive in a number of ways such as feeding hungry victims, provodong shelter and supporting the communities holistically, along with other stakeholders. Religious institutions have played an important role in developing social cohesion by building social and sfaety networks within communities (Bano & Nair, 2007;

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Candland, 2000). Wisner (2010, p.81) asserts that religious communities, groups, institutions and leaders have an "untappetd potential" for the task of disaster risk reduction at the local level. He emphasises that religious groups and organisations are usually the first responders because of their immediate availability and strong local networking. However, he identified the need for engagement of religious communities in community preparedness for disaster prevention so that the untapped potential of these communities could be used for saving lives and reducing vulnerability and economic losses. (Cheema, 2012, p. 39).

AIM AND OBJECTIVES

The main purpose of this paper is to explore and document the role the *masjid* has played in disaster management in various Asian countries. The following objectives have been set for the study:

A. To explore the Islamic worldview about disasters.
B. To investigate the role of *masjid* in the different DM phases of the community.
C. To document the preliminary DM role of *masjid* in selected Asian countries.
D. To develop a model of the potential role, the *masjid* can play in building the community resilience for disaster management in Muslim countries.

ISLAMIC WORLVIEW ABOUT DISASTERS

Traditional believe in religions consider disasters as acts of God (Allah) or disasters are God's will or expression of of His wrath. It should be mentioned that no statement by the Prophet Mohammad (PBUH) ever mentioned that earthquakes or other disasters are expressions of the wrath of God or the result of disobedience or infidelity. Instead there are many statements that show the need to prepare for disasters and prevent from happening (Ghafory-Ashtiany, 2009, p.219)

An analysis of the verses from the Qur'an, reveals that Islamic teaching can be adapted to the principle of disaster risk reduction among religious societies. The most important part of God's bounty to human beings is His guidance, ability, wisdom and knowledge, given in order for people to do good deeds and based on knowledge and cognition, the effects of "good deeds" and "bad deeds" on construction, community and environment can be summarizd in general form as presented in Fig.1.

Fig.1. *Relationship between our acts and protection against disaster (Source: Ghafory-Ashtiany, 2009, p.229).*

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Figure 2 shows that by following the Islamic teaching and principles, people can realize themselves and in religious terms, as the ulitmate goal is to reach heaven. In this world "heaven" means productive, safe, healthy, happy and peaceful life (Ghafory-Ashtiany, 2009).
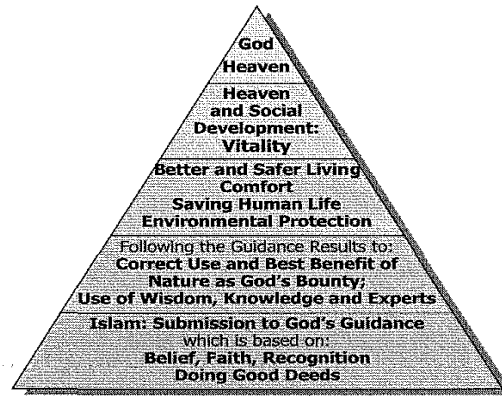

Fig. 2. *Islamic perspective on achieving safety, development, vitality,akin to achieving heaven following the God's guidance. (Source: Ghafory-Ashtiany, 2009, p.229)*

In the case that people perform bad deeds and do not follow the path in Fig. 2, their punishment is destruction and loss of life which will result in disaster, as shown in Fig.3. In other words, bad deeds which are carried out on the basis of ignorance or negligence and without using appropriate logic, in theological language are called "sin". Thus, losses and disasters mainly result from people's bad, incorrect and inappropriate deeds. This is the simple explanation of the concepts and statements that disasters are resulted from sin. Hell, which is the result of sin, refers to a life with misery, destruction, lack of community development and so on (Ghafory-Ashtiany, 2009).
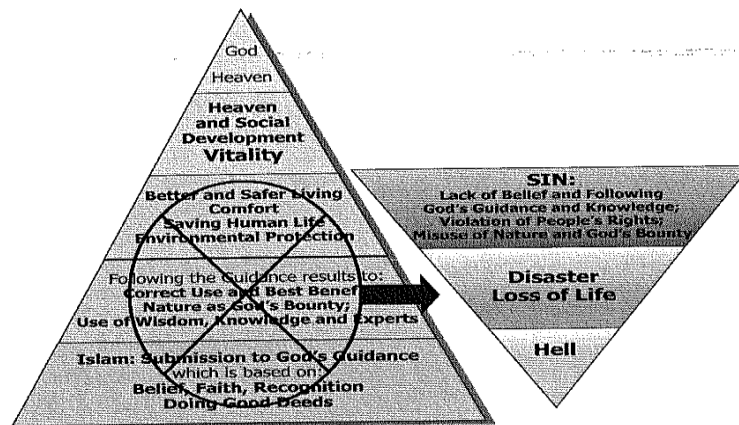
Fig. 3. Islamic perspective on disaster, loss of life and other damages, akin to hell *(Source: Ghafory-Ashtiany, 2009, p.230).*

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DISASTER MANAGEMENT CYCLE FROM ISLAMIC PERSPECTIVE

The conceptual framework of flood disaster management is built on three basic concepts - community, disaster management cycle and resilience.

Community- the term community means a group of people who gather together based on common interests and goals, and they have social bond which unites them into a community. Community can be small or large based on type of interests (IRI-UNOCHA-LPBINU, 2011).

Disaster management cycle – the process relates to all activities which cover planning and mitigating disaster at before, during and after the disaster. The purposes are (i) preventing the loss of lives; (ii) relieving human suffering; (iii) giving information to people and authority about risks and (iv) preventing the damage of major infrastructure, possessions and loss of economy. In practice, disaster management activities are divided into three stages. Stage-1 is predisaster which includes prevention, mitigation, vigilance and early warning. Stage-2 is during disaster which covers emergency response, search and rescue, emergency help and evacuation. Stage-3 is post-disaster recovery, rehabilitation and reconstruction which can span from medium to long term activities (IRI-UNOCHA-LPBINU, 2011).

Resilience – the term is defined as a capacity of the community or members of the community to withstand disaster risk (IRI-UNOCHA-LPBINU, 2011).

Avianto Muhtadi (IRI-UNOCHA-LPBINU, 2011) has developed an Islamic perspective of disaster management cycle (Fig.4), the elements of which have been supported by Al-Qur'an and *Ahadiths*. There are four phases in which Al-Qur'an clearly makes reference about sustainable disaster management. These are – prevention, mitigation, vigilance, emergency response, rehabilitation and reconstruction. Concerning prevention, Surah Al A'raf [7] verses 56-58 explain that human are not allowed to make damage on the face of the earth. This prohibition covers all areas including *muamalah* aspects, such as intruding the source of living and other people's subsistence (Surah Al Qasa [28], verse 4). Based on the lessons learned and best practices from the history of prophets, it is revealed that there were mitigations and vigilance as explained in Surah Yusuf [12], verses 47-49. Efforts were made by Prophet Yusuf (RA) about saving his people and citizens from surrounding countries whenever there was a severe draught, which lasted for seven years. What prophet Yusuf did was mitigation effort in case of a disaster and it was a lessening effort of disaster risk. Surah Al Maidah [5], verse 2 explains about helping each other in emergency situation and Prophet Muhammad (SAW) uttered a hadith which states the importance of human to help each other (Hadith narrated by Muslim).
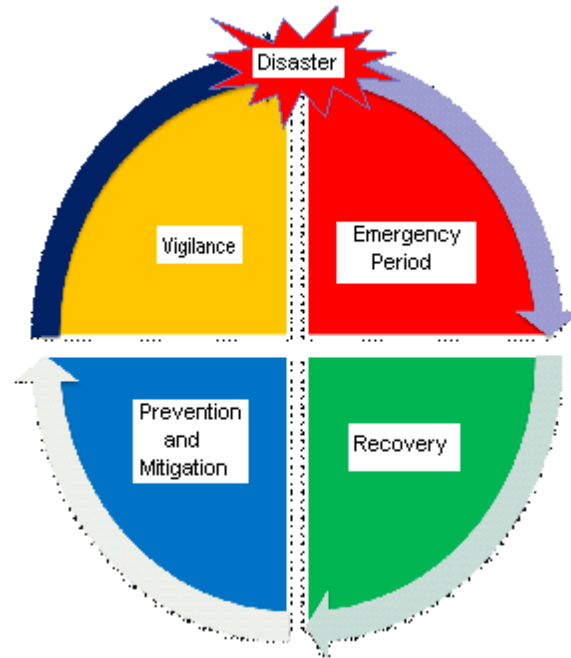
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Fig. 4. *Adaptation of disaster management cycle based on Islamic perspective. (Source: Avianto Muhtadi, 2011)*

Regarding the efforts of rehabilitation and reconstruction, Surah Ar-ra'd [13], verse 11 explains that humans are given the capability to interact socially, to coordinate programs or activities with multi-stake holders in multi- sectors, so that disaster management can be done comprehensively. Al-Qur'an also states that efforts of rehabilitation and reconstruction must obey these principles - 1) increasing public awareness about the cause, symptoms, and handling, so that they would not get the same risks; 2) giving appreciation of tradition (*al-'adah muhakkamah*), culture and local geniuses, so there wouldn't be any friction in the society; 3) cultivating patience and hope to survive, without reducing the readiness to do self-correction and introspection and to prevent despair. (Surah Yusuf [12] verse 87).

With regard to the operational actions in disaster management cycle, success will depend on the resilience mechanism in the community just like the role of a Mosque has functioned by itself. That natural social mechanism can occur because the community has parallel world view with the significance of that disaster relief. Through that view, they can feel directly "what is the best thing to do" when the disaster strikes. As mentioned by Abdullah (2008, referred in IRI-UNCHA-LPBINU, 2011), disaster relief requires speed and approaches based on the particular situation in the field, including operational mechanism that involves its resources, like a Mosque.

The above conceptual framework can be used in flood disaster management where the *Masjid* as a faith-based community organization, can play an effective role as a harbinger in the disaster management in disaster-prone countries of Asia. Cheema (2012) in his study has documented the roles of *masjid* in different phases of the DM cycle (Table 1).

Table 1. *Roles of masjid in different phases of DM cycle*

Roles during response and relief	Roles during recovery, reconstruction and rehabilitation	Role influencing preparedness
1. Initial contact point 2. A space and forum for coordinating response and relief efforts 3. Ensuring the inclusion of the vulnerable 4. Socially integrating forces 5. Recruiting of volunteers	1. Support for livelihoods 2. Psychosocial support, spiritual healing and creating resilience	1. Influence on disaster risk perception

Source: *Cheema (2012), p.127.*

METHODOLOGY

In order to achieve the stated objectives of the paper, the methodology adopted for the study is discussed in the paragraphs that follow. The study is a desktop research and it is based on secondary information pertaining to the documentary evidences in the Asian countries. The role of the *masjid* and its committe played a variety of roles both before, during and after the disaster, which have been described and narrated in news paper, bulletins, journals, government documents. These information form the basic data of the study and they are carefully analysed, in order to arrive at some meaningful conclusions. Furthemore, the documentary evidences have been processed and anlysed to a prepare a model about the potential role of the *masjid* in disaster risk reduction (DRR) in the future.

CASE STUDIES

Documentary evidences on masjid and DM gathered from secondary sources have been structured under the following headings:

Evidence from Afganisthan

Disaster Preparedness through Mosque

The waters of River Kabul feed the crops that Imdad Khan grows in his fields. It is the lifeline of agricultural activities of the area. But every year during June and July when monsoons rains strike the region, the rising waters of the Kabul river turn into a foe for Imdad and his fellow villagers. Recurring floods have been the bane of the lives of residents of Mutabar Kuroon. Not only their crops get destroyed but heavy and incessant rains damage their houses, leaving them without shelter and causing loss of income and other assets. The absence of any early warning mechanism or disaster management capacity at the community level or at the local authorities' level compound the miseries of the affected population.

But this year (2007), Imdad Khan and his fellow villagers were better prepared to cope with the floods. Due to Imdad's training with IRC he knows how to monitor rising water levels through using local knowledge and when and how to inform the community so that they can take necessary measures. It was noticed that the village masjid with its central location and loud speakers can be used to make announcements for early evacuation of the village. A mosque in a traditional muslim village is not only a place of worship but is also a place where community members meet and share information. So a mosque is quite often used to make announcements about different issues related to the community and its members.

This is exactly what Imdad Khan did this year. Being the chairman of the Emergency Management Committee established under IRC's project, he was responsible for monitoring the water levels of the surging river due the rains. "One day when I noticed that the water level was increasing at a great pace, I sensed danger and ran towards the village to warn the people. I remembered the drill that I had learnt in training sessions and went straight to the mosque and made announcement on the loud speaker." says proud Imdad Khan.

     With the use of the mosque's loud speaker, more than 1000 household were warned in time who were not only able to save their lives but also their precious belongings and household items.

Source: International Rescue Committee, 2007.

Evidence from Bangladesh
Emergency resposes through masjid council

Bangladesh has been prone to many natural disasters. Each year people suffer from particularly flash flood and chilling winter. While disaster preparedness is important to curb the impact, emergency responses are equally important to help people adjust with the trauma. Children, widow and women suffer most during disasters. They need strong and special support. *Masjid* Council strongly engages itself in emergency responses after any disaster occurs. *Masjid* Council works in partnership with communities and in line with government's instruction. Masjid Council provided significant responses after all major disasters. Individual supports constitute the major resource base for emergency response.

Apart from natural disasters, Masjid Council provides special support to the extremely needy and poor people to overcome special difficulties. Particularly many poor people seek support to manage marriage of daughters and health care cost and Masjid Council tries to respond to these appeals though its resource base is very limited. Last year Masjid Council distributed worm clothes (About 500 blankets, 1000 chadors and 10,000 sweaters) among the poor people in 11 districts.
Source: http://masjidcouncil.org surfed on 08 October, 2013.

Evidence from Indonesia
In 2011, IRI-OCHA-LPBI NU undertook a study to examine the potential role of the mosque in disaster situation in Indonesia which involved six mosques in two provinces. The preliminary finding of the study indicates positive roles the study mosques played during disasters in different parts of the country. The survey showed that 83.5% from 1,307 respondents stated that a mosque should not only be a place of worship. 84.2% of the respondents were of opinion that a masjid should be used for non-religious activities too, like being the centre of culture, economy, social and edication. The operation should adapt to the prevailing social system in the community surrounding the mosque. The study identified six tactical steps of mosque's role in disaster situation. These include – (a) providing facility and accommodation, (b) storage and siatribution of donations from volunteers and actuators, (c) coordination of mosque and government officials, mosque and other mosques and musallah and mosque and the actuators from outside the community, (d) organizers and executors are cooperating with coordinated parties, (e) encouraging public participation to help victims, and (f) psychosocial therapies with personal or institutional approaches through sermons and mauidhatul hasanah.

Evidence from Pakistan
Cheema (2012) explored the roles of mosques in three communities – Banda-1, Banda-2, and Banda-3, in rural setting of Khyber Pakhtunkhwa province of Pakistan after the 2005 earthquake and found that although there were local differences due to community characteristics, there were broad similarities in the roles of mosques and imams, in disaster management at the community level. Table 2 summarises the findings.

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Table 2. *Role dynamics of masjid in study communities of Pakistan.*

Role dynamics	Study communities – Banda-1, Banda-2 & Banda-3
Cultural Bridging cultural gap between different disaster management actors and the local community.	All mosques served as an entry door for civil society, private sector & government organisations coming to help and work with the earthquake affected communities. Mosques and Imams acted as facilitators and bridges to introduce and build rapport between development partners and host communities. This was essential to win support of communities and to avoid friction and conflict between outside organisation and local communities.
Psychosocial Infuence on disaster risk perception and attitude towards disaster preparedness	All Imams had a critical role in shaping disaster risk perceptions through the institution of the mosque. The mechanism for influence included sharing views in public, delivering open talks and Friday speeches. The earthquake was strongly interpreted as an 'act of God' through references from religious narratives. This interpretation, although useful for creating resilience, hindered practical steps to adherence to safety measures such as building code.
Spiritual well-being, healing and resilience	Mosques provided religious services such as Imams leading prayers and teaching the Koran to children. All communities noted that they were advised by mosques to stay calm and resilient, help each other and refrain from creating disorder and stealing, since it was a testing time for them. All communities greatly acknowledged the psychosocial and spiritual support provided by their Imams through private and public counselling. This healing directly contributed to the resilience among communities.
Economic Sharing of market information	All mosques provided a social space to make collective economic decisions such as harvesting of crops and sharing information about avilability of employment opportunities and seasonal labour in local markets in the aftermath of the earthquake.
Social Women – exclusion and inclusion	In all locations in the case study, women were not seen to be using mosques as physical places. Mosques did not have a provision for women to be able to pray with the congregation, although women desired this. Women sais they would use mosques as emergency shelters in case of a future earthquake. The mosque as an institution supported women's involvement in culturally appropriate activities such as stitching and midwifery training.
Bridging information gaps	All mosques helped bridge information gaps among dofferent actors, including civil society, private sector and the government. All mosques were frequently utilised by all actors to make public announcements through loudspeakers and through word of mouth. Women received information through direct announcements from the mosque and through men and children.
Community welfare	Imams of Banda-1 & 2 did not engage in activities outside mosques as it was deemed inappropriate by the communities they served. But in Banda-3, in addition to religious services, the Imam of the mosque engaged in acts of general welfare such as voluntary teaching in the local school and motivating the community to help each other after the earthquake.

Networking with other actors – civil society, private sector & government organisations	In Banda-1 & 2, Imams responded to civil society, private sector and government organisations during the DM cycle, but did not engage pro-actively. Imams provided some advice to development organisations looking for marginalised (widows & elderly) and the poor to support them in cash and kind. In Banda-3, the Imam was pro-active and actively engaged with all actors during DM cycle.
Influence of a community's perception of the role of the mosque and the imam	In Banda-1 &2, communities did not like the use of mosques for non-spiritual purposes such as public meetings, nor imams performing general welfare functions. In Banda-3, the communtiy was supportive of the role of the mosque and the imam allowed non-religious activities such as community meetings in the mosque. The imam was involved with development organisations.
Political Interaction with public representatives	In Banda-1 &2, mosques and imams had no interaction with pilitical figures. In Banda-3, the mosque, through its imam, had constructive collaboartion with local political figures during the recovery, reconstruction, and rehabilitation phases.

Source*: Cheema (2012), pp.152-53.*

DEVELOPMENT OF A PRELIMINARY MODEL OF DRR WITH THE *MASJID*

Based on the case studies discussed in earlier sections, it appears that a preliminary model of faith based organisation such as a masjid in DRR can be developed and this has been attempted in Table 3.

Table 3. *Roles of community-based religious institution such as masjid in disaster risk reduction*

Disaster phase	Roles the masjid can play in DRR
Preparedness	• Influence people's perceptions of disaster risk and behaviour on the basis of religiously-inspired worldviews. • There is a diversity of beliefs about disasters within religions but generally religions uphold belief in fate which does not necessarily construct believers as inert. • Influence people's choices regarding what is socially and culturally appropriate for a community.
Response	• Very often forefront provider of shelter and food to disaster victims because of their grassroot position. • Motivate and prepare volunteers to different tasks including removing victims from debris and ferrying injured to hospitals.
Relief	• Provide local leadership which promotes sentiments of mutual sacrifice, charity and inspires communities to help others on the basis of divine promises.

Recovery, rehabilitation and recosntruction	• Main source of psychosocial support, spiritual healing and resilience by providing a meaning to life and death with religious interpretations. • Build social cohesion and safety networks critical for saving lives and reducing vulnerability. • Support of religious institutions earns broader community involvement, participation and trust and therefore, their engagement increases the chances of success of projects.

Source: *Cheema (2012), p.51.*

CONCLUSION

This paper has investigated the instances pertaining to the role of masjid in selected Asian countries and found that the masjid has played an imporatnt in the different phases of disaster management cycle in those countries. Based on the evidences, a preliminary model of the masjid's potential role in the preparedness, response, relief, recovery, rehabilitation and recosntruction phases of the disaster management has been developed with detailed identification of the functionalities. Nevertheless, it is emphasised that further research works are necessary for the final development of the model. Finally, it is commented that -

"Religious bodies and authorities need to be engaged and listened to; religious beliefs and practices that might affect disaster relief and recovery must be identified. Religion, though not always positive, can be a source of resilience for millions of individuals and communities – a resilience that must be acknowledged if we are to help people in the midst of disaster" (Reale, 2010, *Humanitarian Exchange Magazine*, issue 48, October, p.5).

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KEY DETERMINANTS OF SATISFACTION WITH COMPREHENSIVE KAMPUNG IMPROVEMENT PROGRAM (CKIP) RESIDENTS IN JAKARTA, INDONESIA

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ABSTRACT

This research evaluates residents' satisfaction with slum upgrading in Comprehensive Kampung Improvement Program (CKIP) five (5) neighborhoods, Jakarta, Indonesia. The results suggest higher satisfaction with social than physical environment. There is a significant difference in the satisfaction level between the five KIP neighborhoods. The research findings qualitatively indicate that the variables of the home or house, environment, and management components of residential neighborhood actually affected user satisfaction of the research sites. Comparatively, qualitative data analyses indicate that both physical and social factors of a residential environment impact positively on personal and environmental quality of residents. In conclusion, residents' satisfaction with KIP neighborhoods qualitatively correlates with their dwelling environment, access to portable water supply, environmental sanitation, and the social environment.

Keywords: Comprehensive Kampung Improvement Programme (CKIP), residents' satisfaction, environmental management, slum upgrading.

INTRODUCTION

Communal and government partnership in settlement upgrading is common in the South East Asian countries. In many of these countries, the majority of families do not buy houses with mortgage financing as commonly practiced in the developed world. Instead, they build their own homes progressively over a decade or so, largely unassisted by the formal-sector institutions. This is because many pre-constructed units are too expensive for the poor to afford, and rental markets may not be viable options. As a result, the urban poor often seek out unoccupied land on which to begin the process of building progressive housing. These communities are often classified as squatter settlements, since they are neither planned nor sanctioned by municipal authorities. Moreover, these progressively built homes often lack running water, sewage, and environmental sanitation. Rural-urban migration in search of economic opportunities for survival makes Jakarta a safe haven for squatters, especially during the last quarter of the 20th century, due to rapid economic growth and entered the new millennium as a city that is being shaped simultaneously in two directions. On the one hand, it is an increasing prosperous, modern and international metropolis, with a growing presence in the global economy, fast-rising high-rises, many fine neighbourhoods, and comfortable places to shop and play. At the same time, Jakarta is overwhelmed with the negative effects of fast population growth, a huge total population, and the challenges of providing for poor migrants and natives. These squatters in continuous transition resort to urban fringes, thus occupying Comprehensive Kampung Improvement (CKIP) sites,

first to share residential units with friends and relations, and later as tenants or squatters. Steinberg (2007: 361) submits that Jakarta is a city with a poor environmental quality. Environmental issues range from air pollution due to vehicular, industrial and emissions and informal waste burning, unclean drinking water, pollution from solid, liquid and hazardous wastes, mercury pollution of seawater, sea water intrusion, disappearing mangrove forests, poorly maintained parks, noise pollution and the widespread menace of insects and mosquitoes to mention the most prominent ones. The bad smell in the Jakarta Bay or along the rivers and canals is testimony to this permanent crisis, which seems to exceed the management capacity of the Jakarta Environment Management Agency (BKLHD) Steinberg (2007:354–365). Informal settlements globally are associated with poor environmental quality due to legal issues tied to their access to land, as well as residents' vulnerable economic position. Below are some of the basic characters of Jakarta's urban villages: -

i.   Lack of amenities like electricity, indoor plumbing for water and sewage;
ii. Kampongs as dynamic communities in transition lack private or communal lavatory
iii. Defecation outside especially on waterways;
iv. Lowest-income households as the main losers in the housing market in Indonesia;
v.   Failure of formal housing delivery efforts to mitigate informal settlements due to:-

- Urban land system's disregard for tenure arrangement
- Limited budgetary allocations to relevant agencies
- Multiplicity of ownerships of fragmented land
- Disparities in water and sanitation access

The world's first slum upgrading programme; Kampung Improvement Program (KIP) in Jakarta, Indonesia was launched in 1969. Up to the 21st century, KIP stands as the Jakarta administration's formal response to so-called kampungs (informal settlements). The program aims at enhancing the quality of life of the densely populated, un-serviced, low-income urban settlements. These habitats scattered around the city accommodate approximately 60 per centof the city's five million inhabitants. The KIP scheme provides basic urban services, such as roads and footpaths, water, drainage and sanitation, as well as health and educational facilities to the urban poor. KIP's initial successes led its adoption as a 'model program'of transforming slums or squatter into habitable urban fabric. Consequently, Indonesia's politicians and media were attracted to the program. Ultimately, recognition of improved kampungs as formal settlements marked the height of KIP scheme. This manifested in the city administration's addition of KIP housing stock in the urban records. Policy makers appreciated user self-help efforts of providing facilities by the people themselves, with minimum public intervention. It also gave them security of tenure (Juliman, 2006). During the initial stage, 1969-1974, the Jakarta Administration (DKI) managed to improve living standards for 1.2million people through an average expense equivalent to only 13 US dollars per head. The Kampung improvementscheme quickly gained its reputation for its successes through the country andacross the developing world. It was an approach that embodied notonly slum upgrading, but social and economic improvement of squatters (Juliman, 2006).The year 1974 marked the entry of the World Bank in supporting the KIP scheme with soft loans to accelerate the pace urban redevelopment. Officially, a dedicated KIP unitwas set up to unify fragmented planning and implementation activities under a single

coordinated platform. By 1979, the Indonesiangovernment thought it wise to expand the KIP scheme nationwide, hence a national policy was enacted (Juliman, 2006).At the expiration of the World Bank assistance programin 1982, the KIP scheme impacted positively on the environmental conditions nearly 5 million urbanpoor. Permanent monitoring and assessment, based on trial-and-error as well as input from the communities, wasa key factor behind this achievement.By 1988, KIPstakeholders realized non-feasibility of prototype solutions to all squatter slums. Hence, community involvement in program planning and implementation was adopted. This led to the introduction of 'KIP III – sustainable environment' known as Comprehensive Kampung Improvement Program to complement the social and economic dimensions of the original slum improvement scheme (Juliman, 2006). The major premise of KIP is to formulate program and deliver services based on what people have and what people want or can do by themselves to improve their environment. Such approach stimulates the willingness of community inhabitants to do more by themselves and work positively within the city budget limit or to contribute financially by themselves in addition. These basic services are enhanced through collaborative efforts of the urban poor residents and NGOs, complemented by material support by the government. Such improvements, even though marginal, culminate in raising the living standards of those neighbourhoods. KIP funds are used to improve public facilities, e.g. to upgrade roads, canals and the water supply, and to construct social welfare, communal bathing and washing facilities, rather than for private accommodation.

LITERATURE REVIEW

Review residential satisfaction researches attempts to identify basic problems typical of such studies; methodologies applied; research outcomes; and the relevance of those to this thesis. Apparent approaches include user Perception of Residential and Environmental Quality (PREQ), Residential Environmental Satisfaction Scale (RESS), a methodological Tool; PE or Person Environment Congruence, Housing modification – HoMi and QoL – Quality of Life Assessment.

Quality of Life (QoL) Assessment of Formal Housing

User satisfaction of newly designed public low-cost housing (Mohit, et al., 2010) uses constructs of dwelling unit features, dwelling unit support services, public facilities, social environment, and neighbourhood facilities to assess. Others like Sulaiman and Yahaya (1987) evaluated the relationship between housing provision and satisfaction of low-income households in Kuala Lumpur. Both researches focus on low cost housing in Kuala Lumpur Malaysia, but from different perspectives. For one, Mohit et al. (2010) core variables assume social climate and physical (access to facilities) dimensions. Although both studies tested Maslow's theory of basic needs, but Sulaiman& Yahaya (1987) examined satisfaction in terms of-

- Housing Deficit - Objective Measurement
- Overall Satisfaction with Housing & its Environment
- Stage in Family Life-Cycle = Demographic characteristic

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Figure 1.2 is the three-component model of theoretical framework of residential satisfaction;
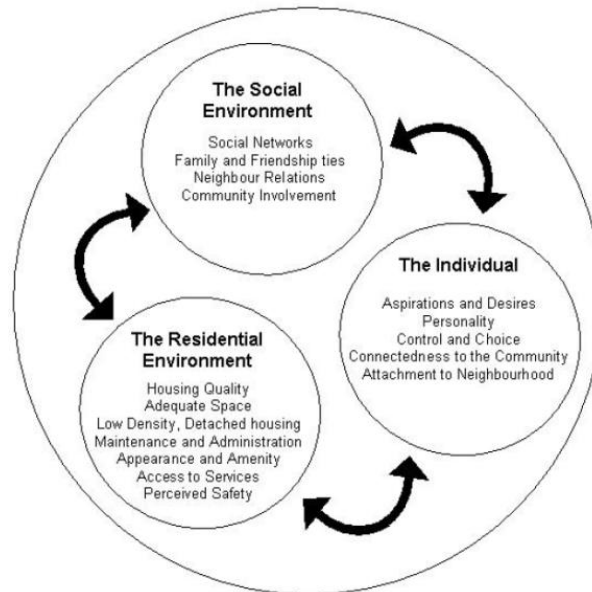

Figure 1.2: *Model of Residential Satisfaction Components*
Source: Marans and Rodgers (1975: 376)

Perception of Satisfaction (PREQ)
PREQ involves testing of a path model of residential satisfaction. This is measured as the user perception of his or her residential environment, specifically, neighbourhood attachment. It employs quantitative research approach as follows: -

i.   Uses structural equation analysis
ii.   Multidimensional questionnaire
iii. Measures PREQ;
iv.   Socio-demographic variables(age, sex, income); Length of Residence
v.   Uni-dimensional scale of neighbourhood attachment,
vi.   Sample Size = 497 inhabitants from 20 diff neighbourhoods
vii. PREQ Questionnaire covers four areas:
   a) Architecture& planning features;
   b) Social relations features;
   c) Punctual & in-network services
   d) Context features

The research outcome shows that Perceived Residential Environmental Quality (PREQ) is Directly Related to Neighbourhood Attachment:
Arch & planning features
Social Relations Features

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Punctual & in-network services
Context features

Perceived Residential Environmental Quality leads to Neighbourhood Attachment
- Social Relations Features depends upon Neighbourhood Attachment
- Social Relations Features increases with Social Relationships
- Social Relations Features decreases with threats to People

Architecture& planning approach to residential satisfaction research shows that Neighbourhood attachment is tied to:
- Building Aesthetic Delight
- Spatial Order
- External Connections
- Presence of Greenery

Residential Environmental Satisfaction Scale (RESS)
RESS introduces an integrative and more comprehensive approach to the measurement of residential environmental satisfaction. It involves quantitative data collection and multivariate analysis. Secondary data set form national housing survey enables a nationwide appraisal to be conducted. Here, quantitative approach involving multivariate analysis of a select sample of large sample respondents of a specific country was applied. The findings of such a research were (Adriaanse, 2007):-
- The outcome of exploratory factor analysis supports the use of the 3- component model of residential environmental satisfaction (neighbourhood, house, and neighbours).
- Multi-group analysis supports the assumption of similarity of perceived quality of the living conditions at different scales.
- Reliability and validity tests confirm that the RESS-DLV is an adequate instrument for measuring residential satisfaction.
- Satisfaction severity of groups indicates the priority of 'residential social climate' component of overall residential satisfaction.

The relevance of RESS in this research is in the adoption of the theoretical three-component model of neighbourhood, house and neighbours. More over the priority of the social climate in vulnerable groups is worthy of testing.

Person Environment Congruence (PEC)
In summary below are reviews of Previous PEC Works;
- Popenoe (1977) – Focusing on Environmental Sociology/No design suggestions for micro-scale development.
- Kahana (2003) – focusing on elderly residence, people with lower level of competence.
- Holland (1985) – focusing on vocational psychology
- Jusan (2007, 2010) – Focusing on mass housing – Using Means-End Chain Model to measure PEC in personalized or modified houses. This approach involves:

- MEC is able to explain the achievement of PEC in housing
- User participation is essential in order to achieve PEC
- Flexible design is able to facilitate the achievement of PEC
- The MEC results show attributes emphasized in house design

As shown in Table 2.1, most of the studies on person environment congruence are able to explain behaviour, but are not directly usable in residential design aimed at enhancing user satisfaction (Jusan, 2010).

Table 1.2
Satisfaction Level of Physical Factors@ minimum level significance of 0.05 (Correlation)

Physical Factors	Significance Level
Regularity of supply vs Justification for fetching water outside.	P = 0.052
Availability of facilities vs Needed improvement	P = 0.052
Availability of facilities vs Justification of fetching water outside.	P = 0.053
Distance from refuse dump vs needed envt improvement	P = 0.050

Housing Modification Phenomenology
Phenomenology refers to logical investigation, involving careful connection to the philosophy existentiality. The phenomenon of effecting changes to housing by users could be associated with changing needs due social, physical and economic dimensions. These may emanate from (Marans et al 1989):

Project Management, Specifically Design and Construction
Occupant Socio-Cultural Characteristics
Housing Conditions and Ranking
Residential Satisfaction

METHODOLOGY
The choice of exploratory case study method, the sampling technique, as well as validity, reliability and generalization were carefully explored. Eminent methodological drawbacks in data collection and analysis suggest flexibility in data sourcing.Consequently, the application of inferential statistics was triangulated with qualitative data to validate the outcome. It adopts a quantitative research paradigm, supported by qualitative evidence. The research variables are grouped into physical, social and economic dimensions, so as to meet the research objectives. Apparent research outcome of trends were tested for theoretical convergence with other data sources, to coincide with post positivist epistemology. This evaluation of determinants of residents' satisfaction with CKIP is a key parameter of quality of life

DATA ANALYSIS, DISCUSSION OF RESULTS
Based on key informant and in-depth interviews, social factors seem to be favoured by majority KIP residents. Physical factors assume secondary position despite their association public health. This coincides with Duhau & Schteingart (1997) in Walker (2001:18) where a categorization

system of the key residential satisfaction components were ranked with assigned values: 5 = Excellent; 4 = very good; 3 = good; 2 = poor; 1 = very; 0 = poor. Consequently, comparative neighbourhood is as shown in (Figure 1.1) to be in favour of social factors. As evidenced, Jakarta Central and East manifest nearly 2:1 dominance of social to physical factors of residential satisfaction. On the other hand, their counter parts in West, South and North show 4:3 supremacy of social over physical features of satisfaction.
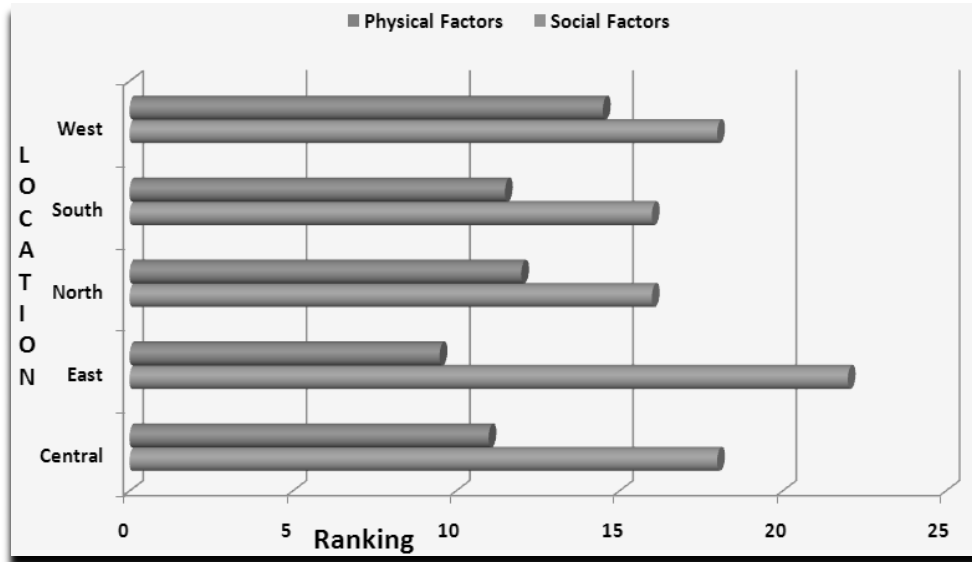
Figure 1.1: *Cumulative Physical and Social factors*

Contrasting physical and social factors of residential satisfaction shows that majority of social attributes of satisfaction manifest high significance level of 0.07. On the contrary, only four physical variables are significant even at lowered margins of 0.07.
The respondents' views on environmental management of their neighbourhoods indicate that (Table 1.4) three quarters, i.e. 300 (76.0%) of the respondents believe official environmental administration of KIP water and sanitation facilities. This was confirmed with interactive interview, where community efforts galvanized with institutional support was advocated.

Table 1.4
Relating Formal Environmental Management to Water & Sanitation Access

	Respondents		Water		Sanitation	
	n	%	n	%	n	%
Yes	300	76.0	163	76.9	137	72.9
No	100	26.0	49	23.1	51	26.1
Total	400	100.0	212	100	188	100

The analysis of variance test yielded an F-value of 46.018, while the R-squared (R^2) value indicates 0.176 variations in satisfaction with estate management which is determined by the explanatory variables (Table 1.5). This R^2 ratio is high compared with those of the environment and dwelling components. It thus confirms findings by Ukoha and Beamish (1997)

and Oladapo (2006), on the relevance and extent to which tenants' satisfaction are determined by management's involvement in CKIP settlements administration in Indonesia.

Table 1.5
Overall F-test value from the regression of dwelling factors

Simple R	R^2	Standard error	Analysis of variance	Sum of squares	Df	Mean square	F	Sig. (P)
			Regression	116.012	5	23.006		
0.419	0.176	0.710					46.018	0.000
			Residual	521.343	981	0.493		

Quantitative, qualitative and field observation data souces were cross tabulated to establish trends of physical, social and economic features of Kampung improvement programs sites of Jakarta municipalities. As such, analysis grouped apparent themes into these dimensions (physical, social and satisfaction). It appears that both physical and social factors of a residential environment impact positively on personal and environmental quality of residents. However, social factors were ranked higher than physical quality of the environment. These results are particularly timely for policymaking, literature and implementation of physical developmental action plans. Quantitative data analysis residential satisfaction shows direct relation between the impacts of age of residency on social attachment to the environment. Perception of social attachment is linked to factors of social interaction. Social attachment depends upon ethnic origin and level of education. Attachment factors vary with the nature of neighbourhood physical condition. Ethnic group relates to neighbourhood nuisance as well as household size. Based on regression analysis, neighbourhood satisfaction of 0.07minimum level of significance, perception of satisfaction with social attachment is insignificant. Both old and newcomers manifest low comfort with social attachment measures of P=0.045. The physical environmental satisfaction factors at minimum level correlation significance of 0.05 suggest that irregularity of water supply justified by fetching outside. Similarly, distance from refuse dump seen too far for safe environmental behaviour. Most of the available basic facilities need improvement to meet demand. CKIP residents' perception of social attachment depends on variables of interaction as follows:-

- Social Attachment
- Variation of attachment due to location
- Ethnic origin
- Neighbourhood nuisance
- Level of Education
- Household size

The difference between social and physical attributes of residential satisfaction depends upon accessibility to basic needs, social ties, income and residents' level of education. These variables are grouped into physical and social components.
Quantitative data analysis shows the reliability data set used in this research in descending order as follows:-

Environmental Sanitation
Social Environment
Physical Environment
Access to Safe Water/Residential Satisfaction
Residents Personal Characters

Profile of Residential Satisfaction: mean values range from 2.01 to 2.09, standard deviation range of 0.09 to 0.27. Ethnic fraternity constitutes the highest satisfaction determinant. Similarly, environmental sanitation is considered the least contributor of residential satisfaction. Nearly half residents are comfortable with their neighbourhoods. Comparative monthly water costs ranges from $1.0 in Jakarta North through $3.52 in Jakarta South, up to $5.72 in Jakarta East. Households of CKIP neighbourhoods of Jakarta Central, West and North spend $1.81, $1.42, $1.10 respectively, as their monthly water expenses. User preconception of environmental sanitation suggests the following ranking:-

Excellent   None
Good   Jakarta East
Fair (average)   Jakarta Central
Poor   Jakarta West
Very Poor   Jakarta North and South

The application regression and factor analysis shows specific factor groups that enhance user level of residential satisfaction in housing and environmental quality. Focusing on access to safe water and sanitation within low income housing environment, the core determinants of factor groups are physical and social environmental variables. Physically, accessibility safe water regularly and affordably is ranked highest. Sanitation management such as refuse disposal and collection follows. Socially, factors of neighbour relations (or social attachment) and neighbourhood security highly influence residential satisfaction. Contrary to initial assumptions, social environment accounts for higher residential satisfaction than physical setting. This tallies with Becker (1974), Galster and Hesser (1981) who submitted that housing physical environmental features accessibility has an important influence on the level of user satisfaction in housing and environmental quality and creates a positive image, hence determines user satisfaction. In order of importance, the factor groups of this criterion are centrality and accessibility to educational institutions, open areas, health institutions, and public transportation, respectively.

CONCLUSIONS AND RECOMMENDATIONS

Residential satisfaction depends on residents' personal characters (social environment) and physical setting (e.g. access to safe water, dwelling, and environmental sanitation). These interact individually and collectively to impact on residential satisfaction. Housing environments generate user satisfaction from a combination competing social and physical variables. Regardless of the economic strata of dwellers, access to basic needs like potable water and

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environmental management, are subjectively rated by residents. For instance, social concerns for fraternity (ethnic grouping, and proximity to peers) seem to be given preference over access to water and sanitation. Similarly, physical variables of access to water, dwelling units, and sanitation contribute residential satisfaction. However, these physical factors fail to assume priority of place over and above social attributes of the environment. This is attributable to dismal access to these services by residents. For instance, regular water supply from mains is hardly available to one third of the sampled population. Moreover, informal water supply sources are far from residences. Economically, the cost of acquiring safe water from vendors seems colossal. Over the years, there has been much discussion on differences and relationships between social and physical residential environments. A general agreement suggests superiority of social variables of place over its physical dimensions, especially access to basic needs. Current environmental philosophy emphasizes many characteristics commonly viewed as physical attributes (or advantages), which are frequently employed to measure quality of life of an environment. Qualitative and quantitative analyses of this research seem concur on the relevance of social values of place, as denominator, while physical features have been relegated to secondary position. This is in spite of the health risks associated with deadly physical environmental conditions. Poor access to safe water and sanitation is capable of threatening the lives of the general public. And this met the third objective of this research.

It is possible to argue that the hypothesis is valid under this condition and we may justify the arguments made at the beginning of the study. The research outcome suggests that the urban poor settlements could be enhanced via public private partnership through cooperation by neighbours to access basic needs for common use, mobility and life style could enhance collective security of life and property, willingness to walk is a feature of urban poor settlements, housing modification typical of poor urban habitats, High occupancy rate is a common practice in squatter settlements, development of neighbourhoods' communities. To this end, quality of life guidelines to urban development needs to be tailored to accommodates neighbourhood walkability, communal responsibility, flexibility of dwelling spaces, which responded to one of the objective of this research. Application of correlation, multiple regression, and ANOVA show significant levels of association within 0.01 or 0.05 probability levels. Residents were averagely satisfied with both their environment and home components. However, they showed dissatisfaction with the management of their respective environments. A significant correlation is apparent between residents' satisfaction levels and the environmental, home and management components of housing ($p < 0.01$). Hence, there is a need to consider relevant factors of the environment, home and management in housing design and development. These include a new attitude towards residential satisfaction, involvement of public and private sectors; and appropriate application of the following core architectural features;-

- Integration of Independent Water Supply into the Public Mains
- Application of Appropriate Water and Sanitation Technology
- Partnership with the Private Sector
- Minimizing of household Risks Associated with Vendor Water supply

Quantitative data analysis of user residential satisfaction sampled CKIP neighbourhoods establishes the correlation between their respective physical environment and social settings. The research systematically identified relevant macro and microscopic residential determinants of

user perception of satisfaction. These have been limited to water supply and sanitation, on one hand; and social (user status in society and behaviour), and economic (cost, willingness to pay, and management) variables, on the other. The research findings have shown that the variables of the home or house, environment, and management components of residential neighbourhood actually affected user satisfaction of the multiple sites case study. This was justified by the significant correlation of variables examined. The findings further showed that while the home and environmental components of housing were satisfactory to the CKIP dwellers, the management constituent seems to be below residents' expectations. This implies that Comprehensive Kampung Improvement Program as housing and urban development strategy in Indonesia though laudable, is yet to meet environmental needs of the vulnerable group. Hence, economic empowerment of the urban poor is prerequisite for any urban redevelopment scheme, thus making it 'Comprehensive' as the name CKIP implies. A clearly focused national informal settlement development program represents a practical and necessary alternative response to conventional housing delivery. This could rapidly deliver a range of tangible development benefits to informal settlement residents at significant scale. Such a response can help to bridge the gulf that currently exists between the state and a key portion of civil society whose current experience is one of neglect and marginalization. It is critical that this alternative response in the form of emergency relief and interim servicing be more broadly and rapidly activated and that it receives the necessary political, administrative, and budgetary commitment it requires. A rapid upfront evaluation of all informal settlements should be undertaken at municipal and area levels in order to ensure that appropriate developmental responses are made that are informed by a basic understanding of the status quo, including the developmental constraints. Multiple categories of informal settlement should be utilized effectively. On a broader term it is necessary that professionals play an active role in supporting urban sanitation in poor settlements. They should take into account the need to satisfy user-housing needs at household and neighbourhoods levels. This requires meeting not just physical environmental requirements of portable water and sanitation, but also social attachment. As shown in this research, due to limited housing choice, the urban poor are more concerned with social dimensions of the environment than physical. Therefore, flexible settlement designs, suited for social grouping and supported by economic opportunities. While social segregation should be discouraged, social fraternity should be considered to a certain level. Planners and policy makers need to appreciate that even those residing in poor settlements require technical support to secure habitable environment. They ought to endeavour to use their skills in assisting these urban poor to realize their objective of access to safe residential setting. Similarly, policy makers must sustain cottage production urban land, within accessible economic opportunities to the urban poor. Planners should popularize the potentials of communal infrastructural facilities.

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USERS' PERCEPTIONS OF PHYSICAL ELEMENTS IN THE HOSPITAL SCHOOLS ENVIRONMENT

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ABSTRACT
The notion of providing special education services to hospitalized children is relatively new in Malaysia. During recovery process in any medical centre, children's education should not be overlooked as the children still need learning activities to maintain a sense of normality. The objective of this paper is to identify the factors of healing provided by physical elements in hospitals, and users' perception of learning environment in selected hospital schools. In order to evaluate the physical elementsand users' perception level, methods of observation and survey were adopted. Photos were documented as supplementary evidence of observation, which were later analysed. There were 51 respondents (n = 51) participated in the survey, whose roles were workers and users of the involved hospitals. Three (3) hospital schools were chosen as the units of analysis. They are hospital schools in Institute Paediatric Hospital Kuala Lumpur; in Hospital Ampang; and in Hospital Serdang. The result showed different satisfaction level among those three hospitals, in relation to users' preferences towards learning in hospital school environment. The identified physical elements contribute to healing and learning environment in hospital schools are in the range of average to medium high score 3.00-4.00, out of 5.00. All the three hospital schools need improvement on their physical elements, so that benefit of learning in hospital setting can be maximized.

Keywords: Hospital School, Children, Education, Healing and Learning Environment

INTRODUCTION
Provision of education in Malaysian hospital is officially established in Paediatric ward on 26 July 2011. This notion is based on the initiative and collaboration between with Ministry of Education Malaysia, Ministry of Health Malaysia, and NurulYaqeen Foundation (Saifulnizam, 2011; MeorHisham, 2011; Lee, 2012). The initiative led to the set-up of hospital school in three (3) selected hospitals; which are Hospital Kuala Lumpur, Hospital Ampang and Hospital Serdang. According to the Ministry of Education Malaysia (MoE, 2011), the idea of providing education in Malaysian hospitals is important to provide children an access to the education in hospital regardless of their health condition. Formal place for schooling is important so that children are not constantly left behind in academic matters while undergoing treatment (Saifulnizam, 2011; MeorHisham, 2011). It is believed that schooling help the children to cope with stress and trauma of hospitalization (Tobin, 2008; Ismail Said, 2006). Furthermore, Ananth(2008) states that due to the improvement of modern science, today's healthcare is no longer designed as a place for treatment but also for healing and curing patients. Therefore, this research paper focuses on investigating the level of users' satisfaction towards healing and learning environment in Malaysian hospital schools, to ensure sick children to have formal education in hospital setting.

LITERATURE REVIEW
Healing and Learning Environment Framework

Review of literature shows that the indoor and outdoor environments in hospital setting especially in Paediatric Wards are important to regain the patients' health in hospital. The indoor and outdoor environment of hospital should be designed to encourage healing, and to promote learning environmentfor sick children. Although not widely researched, some scholars and organizations dohave interest in the topic of healing in hospital. For example; evidence of the importance and effects of healing to paediatric well-being are presented by RoslindaGhazali&MohdYusoff (2010); Linton (1992); Jarousee (2010); Ananth (2008, 2009 & 2010) and Schweitzer, Giplin, & Frampton (2004). Those researcher have conclude that parameter of healing comprises of several elements or framework that has prepared by Samueli Institute.

Figure 1.1 shows the Optimal Healing Environment (OHE) framework outlined by Samueli Institute. It is comprises of seven elements explaining on exterior and interior healing environments. The Interior environment consists of three sub- elements; Developing Healing Intention, Experiencing Personal Wholeness, and Cultivating Healing Relationship. Whereas the exterior environment consists of four sub-elements which are; Practicing Healing Healthy Lifestyle, Applying Collaborative Medicine, Creating Healing Organizations and Building Healing Spaces. The Optimal Healing Environment framework provided covers inclusive and whole approach towards healing process. However, this paper will focus on Building Healing Spaces in order to identify the best physical elements in exterior and interior environments.

OPTIMAL HEALING ENVIRONMENT

Developing Healing Intention	Experiencing Personal Wholeness	Cultivating Healing Relationship	Practicing Healthy Lifestyle	Applying Collaborative Medicine	Creating Healing Organizations	Building Healing Spaces
Expectation	Mind	Compassion	Diet	Conventional	Leadership	Nature
					Mission	Colour
Hope	Body	Empathy	Exercise	Complementary	Culture	Light
					Teamwork	Artwork
Understanding	Spirit	Social Support	Relaxation	Traditional	Technology	Architecture
					Evaluation	Aroma
Belief	Energy	Communication	Balance	Integrative	Service	Music
ENHANCE AWARENESS	ENHANCE INTEGRATION	ENHANCE CARING	ENHANCE HEALTH HABITS	ENHANCE MEDICAL CARE	ENHANCE PROCESS & STRUCTURE	ENHANCE SENSORY INPUT

INTERIOR ENVIRONMENT	EXTERIOR ENVIRONMENT

Figure 1.1: *Structure of Optimal Healing Environment from Samueli Institute, United States*

However, authors such as RoslindaGhazali&MohdYusoff (2010), whom did a research on "Assessment of Healing Environment in Paediatric Wards", reviewed that the "Building Healing Spaces" component required further amendment and improvement. According to them, the healing spaces in the modified model are includes the exterior and interior environment. Exterior components comprise of Garden, Playground, Artwork and Sound while interior

environment is more on Colour, Ambience, Outdoor View, Lighting, Artwork, Safety, Ergonomic, Art therapy, Music therapy, Aromatherapy and, Pet therapy. Meanwhile, research done by Ananth (2008); and Schweitzer, Giplin& Frampton (2004) argues that other than concentrating on those physicalenvironments, physical parameter such as spaces and ergonomic factorsalso important factors that should be consider while designing. The needs of study about the two elements are needed as this study is emphasized on implementation of learning that has been conducted in Malaysian hospitals. Furthermore, previous studies done by Ananth (2008); Schweitzer et al. (2004) and RoslindaGhazali&MohdYusoff (2010) only emphasized on creation of healing environment in wards meanwhile this research has combine in designing both healing and learning environment in Paediatric wards. As a result, figure 1.2 is shown the modified and enhancement of optimal healing spaces according to the research done by previous researchers.
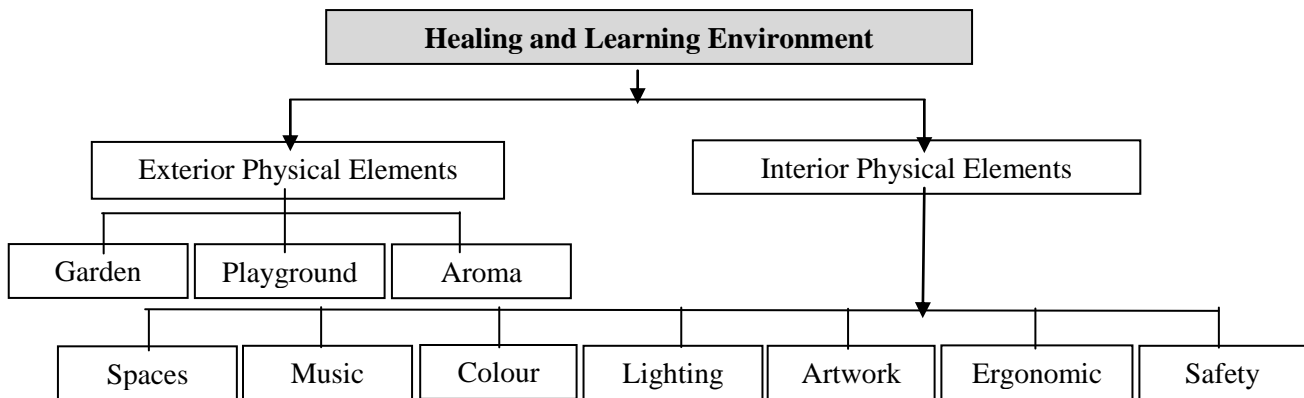
Figure 1.2: *Modified Physical Elements on Healing Environment Framework. Adapted from Ananth (2008); Schweitzer et al. (2004) and RoslindaGhazali&MohdYusoff (2010).*

Exterior Physical Elements

Garden, playground and aroma are parts of physical elements that may contribute to the healing process of patients in exterior environment. The improvement in exterior environment of hospital, especially in garden and playground,is attempted to reduce pressure, reduce nerves, and promote health and healing to patients (Ismail Said &MohdSarofil). Scanlon et.al, (2006: cited in RoslindaGhazali&MohdYusoff, 2010) states that due to the nature of children, they face more mental distractions and stress in hospitals as compared to adults.

Many researchers perceive that outdoor view or nature can reduce the impact of illness, improve performance, reduce length of stay, and reduce depression among patients in hospital wards. The importance of having garden for healing is in accordance with the statements by Ulrich (1995). He states that views of nature and playing in garden have been related to the shorter staying period in hospital. This is because;the calm environment in garden is able to lower blood pressure and reduce heart rates of patients. Ismail Said &MohdSarofil (2006) state that it is the current trends for landscape architects and physiologists to use therapeutic gardens as part of holistic medicine to enhance recovering process to hospitalized children. Ulrich (1995) also agrees that; by perceiving natural environment, one is able to reduce stress and improve the health especially to children.

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Another exterior elements contributed to healing is playground. Playground has also proven to develop positive impact of surrounding environment especially in children play area. Turner (2009) states that outdoor play area is always a medium for interaction between patients, families and staff.Children feel at ease and more open-minded to others in open environments. Outdoor play area can be divided into two categories; natural and man-made playgrounds (Ismail Said &MohdSarofil, 2006). Several authors argue that impacts on emotion of playing in a natural environment are greater than playing in a man-made or structured environment. This is because; children have interaction with many living things such as trees and animal in outdoor areas. Furthermore, Gasalberti (2006) states the uses of animals such as dogs, cats and birds often help those children with the physiological problems.His statement is supported by Nagengast (1997) and Ascione (1992) as they state that having an animal-assistedable to decrease child's stress as the presence of animal's enhances empathy and positive feeling that benefit the emotions of the hospitalised children.

The research shows that in order to reducing pressure, fragrances are often used in hospital. This is because the aroma or scent is the "silent persuader" that usually influences the mind, body and health (Gappell, 1991). The pleasant aroma could have significant impact in term of reduce stress, anxiety and blood pressure especially to the hospitalized children.MohdYusoff&RoslindaGhazali (2009) discovers that most children feel anxious and discomfort when they are approaching hospital. The hospital features and smells of medicine always generate fears and depression to the children (Ananth, 2008). Furthermore, Bonadies (2009: cited in RoslindaGhazali&MohdYusoff, 2010) find that unpleasant aroma not only distract the children but also the parents who accompany their children in waiting area or in an emergency room.Based on the review done by several researches on promoting aroma as part of therapy living things; trees and flowers are the main elements of contributing aroma to the outdoor environment (Wan Hassan, 2007; Gappell, 1991; and Schweitzer et al.; 2004). According to Wan Hassan (2007), most plant essential oils have anti-infective properties such as antimicrobial, antiviral, anti-inflammatory, pain relieving, anti-depression and expectorant. The plants are functioning to improve immune system and enhance the delivery of nutrients to the cell. Meanwhile, Schweitzer et al. (2004) also states that pleasant fragrance of living flower or trees is a moderator to lower patient's anxiety meanwhile negative smell normally stimulates sensation of anxiety, fear and stress among patients.

Interior Physical Elements

There are many researchers and organizations that examine on the impacts of interior physical parameters of hospital to healing and learning environment. The elements of physical environment that can contribute to children's development and support to healing and learning include space, music, colour, lighting, artwork, accessibility, and safety.

RoslindaGhazali&MohdYusoff (2010) mentionpatients prefer the ambience of "homelike environment" at the hospital. This is because; the children experience less pressure in familiar environments rather than new or strange surroundings. Based on the Department for Education and School (2001), a general requirement for main teaching and learning accommodation must be different in every stage or level of education. In order to provide accommodation to compliment the academic functions, space for hospital schools should be designed as a "special school" because the children in different ages have different waysof adapting learning (Tobin,

2008). AsiahAbdul Rahim (2001) and AinulMarziana&SuhardiMaulan (2010) agree that it is important to understand children's preference towards space because they have different needs, desires, and behaviour. For example; children from secondary level which is age between 12 years to 18 years old may have different necessities from the primary level which is age 6 years to 11 years old (Tobin, 2008). Children who are in secondary level should have access to a more independent workspace which is not only working in a group work but they may prefer into individual study, investigation, and research by their own (Guild, 1994). Furthermore; possible ratio of the teaching area to non-teaching area should be 60% to 40%. Classroom space includes workgroup area, personal workspace, and examination room. Meanwhile 40% must be provided for support area such as storage, administration office, staff area, toilet and circulation (DfES, 2003).

There is a considerable body of knowledge to support the effectiveness of music therapy in a hospital environment. Music is believed to provide calm environment, improve sleep time, work against fears, and relax muscles and nervous systems to children (Mazer & Smith, 1992; Ananth, 2008). American Music Therapy Association and Joanna Briggs Institute (2009) present the finding that exposing children to music can stimulate their overall emotional development such as improvement in moods and distraction towards illness. It is stated that music does not only improve patients' mood and reduce anxiety, but also promotes physical healing to patients. This is because the common theory behind music is music acts as distracter. Oberlin (2008) also mentions that music is considered as a universal language.It provides an escape from negative impulses; such as discomfort and nervousness among human. Meanwhile, in terms of providing learning environment, UNESCO (2004) states that, 30% of children learn successfully when they hear something, 33% of them learn when they see something, and 37% of them learn through movement. Thus, learning should be conducted with support of song, dance, and acting as the students give more attention in the classroom.

Research has demonstrated that colour strongly influences health, emotion, behaviour, performance and psychology especially for the children (Deggett, Cobble &Gertel, 2008). The variety of colours in hospital provides joyful and pleasant environment; hence contributes to the healing process to the children in wards. Certain colours are believed to encourage activities, while other colours could endorse passive behaviours (Schweitzer et al., 2004). Selection a good colour scheme is very important to influence human emotion. According to DfES (2003), spaces and colour schemes should be designed as a whole so that it works in complimentary manners. DfES (2003) suggest that calm and neutral colours are preferable in ward environment and teaching spaces. Natural colour normally is chosen because the colour will blend by colourful displays and artworks produce by children.Colour affects one's perception towards space as well. The choice of warm or cool colour can determine the utilization of spaces. Gappell (1991) points out in terms of space and thermal comfort, people feel cooler in cool-toned room compared to the warm-tone colour even though the temperature may be the same. Thus, it is compulsory for the interior designer to choose the right colour for environment in the hospital as it is often affecting overall health, emotion, behaviour, and perception of the patients in hospital.

The lighting components of architectural space comprises of two elements; natural lighting and artificial lighting. Gasalberti (2006) states that natural lighting is proven in contributing to healing as it provides vitamin D for human's skin and enlighten human's mood. According to Beauchemin& Hays (1996: cited in RoslindaGhazali&MohdYusoff, 2010)

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depressed patients can be treated using bright light in rooms. They also found that patients who are treated in bright and sunny wards potentially have reduced the length of stays in hospital, as compared to those who are treated in dull rooms. Beauchemin& Hays views are supported by Ulrich (1995). They are in agreement that patients in rooms equipped with windows heal better and faster becausecof there is penetration of natural light in their rooms. Therefore, the healing effects of natural lighting are proven to improve health condition for patients in hospital.

Researchers agree that the environmental aesthetic is important to patient's well-being. Arts are actually important in contributing colour and positive environment in a hospital environment even though it is difficult to see the connection on how the artwork and the building interrelated (Torrice, 1988). Bishop (2010) defines "art" as simply a graphic treatment that could be practical in a hospital environment even though it's values of existence unlikely to be noticeable by children. The introduction of artworks, paintings, and photographs in hospital environments is proven to help patients in lowering their stress level, reducing anxiety levels and improving moods among children in wards (Bishop, 2010 and Ridenour & Sadler, 2007). Furthermore, Eisen (2006) and Daykin, Byrne, O'Connor &Soteriou (2008) suggest that in order to create a positive environment in the hospital, instead of single space like wall, gallery space should be introduced to the children. The leisure space and colourful environment of gallery are able to lessen nervousness and depression in the wards. Besides, the involvement of the children in producing artworks is really important. Bishop (2010) states the artwork is more treasured by children if it is prepared by themselves. This is because; the artwork could be displayed as supporting message left from one child to the others. Allowing the hospitalised children to display their artwork also gives a sense of ownership of the place to the children (Daykin, Byrne, O'Connor &Soteriou, 2008).

Accessibility and anthropometric factors are important in designing a space especially for the children with medical needs. These factors help children with medical needs to take part in learning sessions in hospital (DCFS, 2009). DfES (2003) highlights that classroom should be highly visible, located near the lifts, easily accessible, and located at suitable place. This is because, the hospital schools must be prominent so that the staff, parents, and the children become aware of its presence and location. Furthermore, in order to provide the opportunity for hospitalised children to access hospital schools, DCFS (2009) suggests there should be accessible circulation route for the people who are using wheelchairs or stick to pass through spaces. Importantly, the educational places should be on the same level as the children's wards (DfES, 2003). This is because, children with disabilities move around with mobility aids; using special equipment such as wheelchairs and sticks.

Meanwhile, anthropometrics is the scientific measurement of human body, shapes and physical capabilities DfES (2003). An understanding of this ensures that the children can use the facilities that are provided for them. Thus, in this research, anthropometrics factors including the provision of tables, chairs and circulation areas are concluded. In terms of anthropometric factors, Leudier (2003) mentions that the children should not be treated as adults because they are growing and developing. Hence, there is a need for provision of anthropometrics in providing furniture for them. DfES (2003) suggests that in order to provide a comfortable environment, the minimum, open and light furniture are recommended to be used in the classroom. The requirement is needed as it provides flexibility especially to assist the wheelchair users in classroom and wards (Mujumdar, Patel, Mitra, Moothan, Byahut&Pandya, 2004).

Designers, architects, and the relevant organization haverealized the importance of education to hospitalized children. In the study done by National Association for the Education of Young Children, it is stated that the safety requirement is essential to ensure quality of children development. Safety requirement is proposed to be the basis of designing hospital school as this could encourage active and passive activities of children in school environment (National Institute of Building Science, 2004). For safety requirement, DfES (2003) suggests that two (2) aspects need to be considered to ensure the safety among children and users of hospital schools.Firstly, the managements and teachers need to take control over the people who enter schools. The school areas should be private, so that only parents and teachers are allowed to be in classroom with children. To ensure the safety of children and properties of hospital schools; the entrance must be lockable, entrance operates using code operated lock, and CCTV is installed in schools area (DfES, 2003). Secondly, there must be supervision of teachers or parents, to make sure the safety of the children in the classroom. According to Tzeng& Yin (2008: cited in Stichler, 2011), there is different environment between in hospital schools and at home. The new and strange environment can be a dangerous place for the children. Thus, they cannot be left alone in schools without the supervision from adults in order to avoid any unexpected accidents.

RESEARCH METHODOLOGY

Data Collection via Survey

Primary data on perception of users was collected through questionnaire survey in selected case study hospitals; which are Paediatric Wards Hospital Kuala Lumpur, Hospital Serdang and, Hospital Ampang.Data was collected from relevant focus group, who is the users of hospital schools. The users comprise of children, teachers, parents and staffs who are involved in hospital schools. 51 respondents (n=51) participated in the survey.

Data Collection Procedure

The following is discussion on procedures undertaken while collecting data in cases studies area; in three general hospitals in Kuala Lumpur and Selangor. First, permission to visit the places was applied through online registration via Education Research Application System (eRAS). Consequently, researcher received a formal approval letter from Director of Research and Planning Division, Ministry of Education Malaysia. Furthermore, prior to site visits in the wards, the approval was obtained through online application from Malaysia's National Medical Research Register (NMRR). Both permission letters were sent to the head teachers in every hospital schools to make an appointment to visit hospital schools.

The survey questionnaire consisted of four parts which are Part A, Part B, Part C and Part D. The questionnaire is prepared in two sets of languages; in Malay and English. Part A commences with respondents demographic which is aimed to get information on the background of the respondents.Part B focuses on awareness and highlights the opinion of users toward learning sessions that are conducted in the hospitals schools. Part C emphasizes on finding out the level of users' satisfaction on the services and spatial requirements provided in hospital schools. 10 elements of spatial requirements were listed consisted of exterior physical elements; such as garden, playground and aroma. Whereas, for interior environment, it is consisted of 7 physical elements such as space, music, colour, lighting, artwork, accessibility and safety.

Lastly, Part Dcentres on suggestions from the respondents for further improvement of hospital schools in future.

The distribution of questionnaires to focus group was conducted during class hours which are during morning session 10.00 AM to 12.00 PM and afternoon session at 2.00 PM to 4.00 PM. Meanwhile, the surveys in wards started at 4.30 PM to 6.00 PM as researcher was only permitted to enter the wards during visiting hours. Total of 75 questionnaires were distributed in three hospital schools, however, researcher only received feedback from 51 respondents.The result of survey was analysed using descriptive analysis, by using Statistical Package for Social Sciences (SPSS).

RESEARCH FINDINGS

Respondents' Feedback from Questionnaire Survey

Only the third section of the questionnaire, Part C, is designed to achieve objective of this study which is to determine the level of user's satisfaction in physical elements provided in hospital schools. The questions were divided into two sections; which are exterior and interior physical elements. Exterior element consists of three elements which are garden playground and aroma while interior element consists of seven elements which are space, music, colour, lighting, artwork, access and safety. Table 1.1 illustrates the overall result of users' satisfaction from the survey towards physical elements in three hospital schools environment

Table 1.1: *Diagram Analysis of Satisfaction Level on Physical Elements in Hospital Schools (Source: Primary data, 2013)*

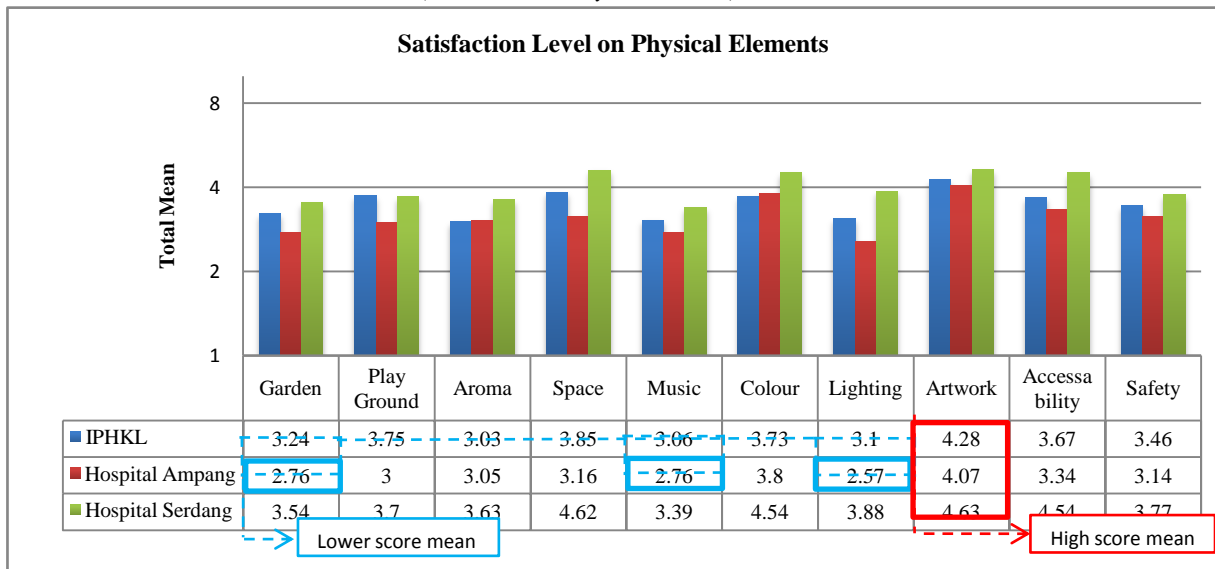|	Garden	Play Ground	Aroma	Space	Music	Colour	Lighting	Artwork	Accessa bility	Safety
■ IPHKL	3.24	3.75	3.03	3.85	3.06	3.73	3.1	4.28	3.67	3.46
■ Hospital Ampang	2.76	3	3.05	3.16	2.76	3.8	2.57	4.07	3.34	3.14
■ Hospital Serdang	3.54	3.7	3.63	4.62	3.39	4.54	3.88	4.63	4.54	3.77

Table 1.1 shows the compare mean of the satisfaction level of physical elements in hospital schools. It shows that a medium to high score (range 4.00-5.00) recorded on every aspect of physical elements provided in hospital schools. The highest significance of score mean is from artworks element; IPHKL (4.28), Hospital Ampang (4.07) and Hospital Serdang (4.63).

In relation to the analysis; four (4) questions were asked in artwork element. The questions focus on availability, functionality and effects of artwork to children and their surroundings According to the head teachers, children are always welcomed to produce and display their artworks in the classroom. Teachers believe that, therapy artworks are able to reduce stress, as the children can freely express their emotions through artwork and paintings. Figure 1.3 shows displayed artwork in classroom at hospital schools.

Figure 1.3: *Displayed artwork in classroom. From left to right; Hospital School Institute Paediatric Kuala Lumpur, Hospital School Ampang and Hospital School Serdang (Source: Primary Data, 2013)*

Average to low score is categorized under the range of 2.99 to 1.99. From the table 1.1; Hospital Ampang was identified to have several of average to low score mean.Lower score mean were recorded in elements of garden (2.76); music (2.76) and lighting (2.57). From the feedback of lower score in garden element, the main reasons contribute to this findings are; garden is not accessible at times, while the playground does not have sufficient facilities except two; sea-saws and slide. Respondents also rated implementation of music as poor here, as there is no implementation of music in the classroom as well as no interaction from calm noise from the garden. Furthermore, the respondents mentioned that there was poor ventilation and day lighting in the primary classroom. The classroom is fully utilizing the artificial lighting as a main light source as there are no windows to allow natural light to enter the room. Figure 1.4 shows poor distribution of natural lighting in classroom is it enclosed with four solid walls and there is no window in the classroom.
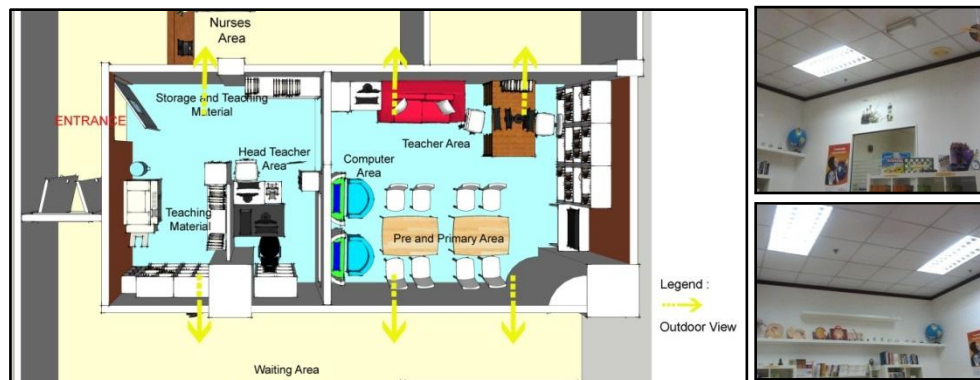

Figure 1.4: *Distribution of lighting in primary classroom in Hospital School Ampang (Source: Primary Data, 2013)*

Looking at data display, the overall result shows that the physical element that contributes to healing and learning environment in hospital schools is still in the range of average to medium high score. Each hospital schoolsare having their own flaws in designing healing and learning environment to hospitalized children.However, from the table; there is no low scored mean (range <1.00) which is rated as poor is recorded in this survey. Thus, it can be conclude that the users of hospital schools are satisfied with the physical elements provided in hospital schools even though some elements are not in the level of excellent.

RECOMMENDATIONS

It can be concluded that, all the three hospital schools still need improvement in order to design excellent healing and learning environment for the hospitalized children. Hospital schools management should consider to upgrade the spaces, unrestricted access to garden, implement soft music and natural lighting in classroom.

From the case studies of three hospital schools, there seems that there are inadequate spaces especially for non-teaching area which are teachers' personal area, toilet, pantry and meeting area provided in school area. This happened because of the limitation of space as the current hospital schools in Malaysia are actually adaptingthe spaces in wards. Even though the previous design of general hospital in Malaysia did not include design for education place, but it is responsibility for the authority to make it happen. The responsible bodies such as Ministry of Education Malaysia (MoE) and Ministry of Health Malaysia have to provide adequate spaces for learning area in future hospital design.

It is important for the designer and child expert to create more creative and stimulate environment that have connection with the outdoor environment. Researcher found that during the case studies, children have limited access to the garden. They are restricted to access the garden during learning session due to their safety, health and climate condition. In order to emphasize the safety, researcher suggests that the present of parents and hospital staffs during learning session conducted in outdoor environment. Furthermore, the outdoor spaces also should be design to have gazebo, table, and benchesunder the shaded area to accommodate outdoor learning activities.

Lastly, from the case studies, it is shows that implementation of music and natural lighting in classroom is not really emphasize in classroom. The hospital schools management should attempt in introducing music as part of the therapy for the children. Soft music should be played as a background during the learning and activity session in classroom. However, the selection of the music should be suitable so that it does not disturb the concentration of the children in classroom. Classrooms should have more openings to allow natural lighting and ventilation especially in the small space. If possible, the small and cramp area should use glass walls instead of concrete wall as it is beneficial in terms of space saving, transparency and allow maximum day lighting into the spaces.

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CONCLUSIONS

As a conclusion, this study has indicated that the all pioneers of hospital schools ideas in Malaysia are not fully in excellent conditions. This is because; the implementations of learning in hospital are still at the early stage, compared to other developed countries. If all the elements are taken care of, it will enhance the healing and learning of those three hospital schools in equipping formal education place for hospitalized children.However, nowadays Malaysian seems to have a better understanding on the importance of having a good environment especially in Paediatric wards. This is a good indication and a benchmark to create a better hospital schools in future for hospitalized children in Malaysia.

ACKNOWLEDGEMENTS

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A LITERATURE REVIEW ON DEVELOPING READING KIOSK CONCEPT FOR NURTURING READING HABIT AMONG YOUTH

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ABSTRACT

Many activities and strategies had been implemented to nurture reading habit among Malaysian citizens. In a bid to boost reading programs, the Malaysian Government has outlined several approaches that are hoping to expand the reading culture among the citizens. However, statistics revealed by the National Library that Malaysian read 8 to 12 books per year. Compared to our nearest neighbor, Singaporeans read 30 books per year .People in Britain and Japan read an average of 20 books per year. So this means that, in the reading level perspective, Malaysia is far behind developed countries in the world. Empirical studies found that teenagers are reading fewer books in general and reading is declining as an activity among teenagers and they had a bad impression towards the library. Consequently, the library is used by teenagers mainly to study or do homework rather than to borrow items to read at leisure. De Medina (1976) found that reading which is outside school hours occurred when there was an allocated place to carry out reading activity. Having all these considerations, the main part of this research intention is to develop the concept of reading kiosks specifically to attract the teenagers in the study area. Based on the review undertaken, there is no study being conducted in assessing reading habit in relation to the built environment. Thereby, it is the interest of the research to investigate the relationship between reading habit and built environment, thus investigating the suitable design criteria of a reading place that can attract people coming for reading and finally proposing the concept of reading kiosk as a final output of the research. The participants of the research were the secondary school students at SMK Gombak Setia and SMK Bandar BaruSentul. This paper however, discusses the literature review on the reading habit, the approaches and the concept of the library being applied to promote reading activity among the citizens and also outline the research methodology that likely to partake. This study and review might be helpful in formulating the recommendations on the concept of reading kiosk as a final output of this research.

Keywords: reading habit, reading kiosk, teenagers, built environment, concept

INTRODUCTION

The love of reading is not innate; it is a habit which must be cultivated. But Jean Grambs (1959) asserted "the habit of reading will not flourish if the only nourishment comes from a text. If we rely too heavily on textbooks, and then we cannot expect to nurture the reading habit" (Jean Grambs, 1959, pg.220). Many activities and strategies had been implemented to nurture the reading habit among the citizens including Malaysia. In a bid to boost reading programs, the Malaysian Government has outlined several approaches that are hoping to expand the reading culture among the citizens. However, statistics revealed by the National Library that the

Malaysian reading level is far behind developed countries in the world (New Straits Times, 2012).

In order to create appropriate conditions and encouraging Malaysian to read, there are a few tools that the government and related organizations would be used, such as libraries which includethe National Library, Rural Library, Mobile Library, School Library and etc. However, the conventional space arrangement of library for reading activities leading to a stressful and boring reading activity because reading is considered as passive activities. Many groups of people could not stay long with the reading activity in such provided spaces especially kids and youngster. In addition, G.Freeman (2005) asserted that the library would become obsolete due to the emergence and integration of information technology in reading activity. Regardless of this phenomenon, a reading place should be designed attractively in term of the concept, layout design and also complemented with various facilities including the information technology to be in line with the current reading trend.

Having these considerations, this research deals with developing the concept of reading kiosk for secondary school students at suburban villages in Kuala Lumpur. Through built environment, perhaps this idea would contribute to cultivate reading attractiveness thus improving the level of reading among Malaysian citizens.

Specifically, this research is intended to cover the following objectives:

I.   To identify the demographic characteristics of the secondary school students in relation with reading habit.
II. To assess the attitude and values of the secondary school students towards reading activity and library
III. To analyze the relationship between built environment and reading factors
IV. To recommend the concept of reading kiosk
V.   To formulate reading strategies to implement the reading kiosk

LITERATURE REVIEW

Reading Definition

The definition of reading has undergone through many modifications. According to Fayaz Ahmad (2011), in the past, reading simply meant to extract visual information from any given codes or systems. However, thereafter, reading became much more complex and involved the understanding of a whole text composed of written signs (Fayaz Ahmad, 2011).Islam had also emphasized on reading. The very first surah revealed to the Prophet Muhammad PBUH began with the word 'Iqra' which means both read and proclaim, and which had widely been understood as a call to knowledge in the Muslim world (Stian,2008). Another scholar asserted that 'Iqra' is not just reading text, but also reading and understanding what happens around us" (Wilanduri, 2003, pg 99). From these statements, it can be concluded that reading is the ability to identify the sentences and understand the information within. It is a cognitive process of understanding a written linguistic message and to examine and grasp the meaning of written or printed characters, words or sentences. Reading is not only relying upon the text, it can either through understanding the situation happens around us.

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Reading Habit
Sangkaeo (2000) refers reading habit as to the behaviour which expresses the likeness reading of individual types of reading, and tastes of reading. In other word for this study, it refers to the frequency of reading as well as the average time spent on reading and the amount of reading materials being read. The importance of reading has resulted in much research work conducted to understand the nature of the reading habits of individuals. Research on reading habit has been done on teenagers or young people (Wicks, 1995; Machet, 2004), on college students and adults (Gallik, 1999; Kirsch and Guthrie, 1984; Ali, 1994), and on specific cultures and society, such as Malaysian (Long, 1984; Frank Small and Associates, 1996). Based on literature review undertaken, previous studies conducted are concerned with the factors that associated with a reading habit including gender, location either rural or urban area, time spent in reading, reading purpose, reading motivation and reading material. The factors which associated with a reading habit as found by the previous researcher illustrated in the Table 1 (refer to appendix).

Based on the Table 1(refer to appendix), the gap in this literature has been identified and it is found that there are no studies had been conducted in assessing the association between built environments and reading habits. Review undertook found that there is a lack of evidence to substantiate that the built environment influencing the reading habit as concerned by this research. Thereby, it is the interest of the research to investigate the relationship between reading habit and built environment, thus investigating the suitable design criteria of a reading place that can attract people coming for reading and finally proposing the concept of reading kiosk as a final output of the research.

Built Environment in relation to Reading Habit
According to De Medina (1976), reading outside school hours occurred when there was an allocated place to carry out reading activity. Therefore, in order to nurture the reading habit among the teenagers even outside school hours, such an attractive reading place which is other than school library needs to be developed.

Clanley (2007) asserted that good internal design can have a significant impact on library use, as well as enabling staff to manage the diverse needs and behaviors of a range of users and age groups. Based on this assert, it can be concluded that the built environment which refer to the internal design of a reading place will influence the users' behavior towards reading activity.
In Ireland, as reported in the 2007 National Recreation Policy, the larger public libraries have dedicated "teen zones" with sofas, CD-listening posts, free Internet access and multimedia and music collections. The availability of these services can draw young people into accessing literature, as well as information relevant to their needs. (OMC, 2007). Therefore, it can be concluded that the various facilities provided influencing teenagers to visit the library.

Based on the survey conducted for young people at 32 city and county public libraries in Ireland, it is found that the young people emphasized a desire for comfort, relaxation and refreshments, and spaces where they could meet other young people. (McGrath, Rogers and Gilligan, 2010). The authors added that the comments from the respondent such as 'being allowed to talk (quietly)' and 'more comfortable furniture' were also common (McGrath, Rogers and Gilligan, 2010). Hence, it can be concluded that young people demand the informal environment while reading at the library in order to avoid a stressful reading activity.

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Physical barriers for young people to visit library have been found to include issues such as distance and transport, competition from other services and attractions, and limited opening hours; psychological barriers include an association with the study, silence or boredom, a stereotype of library staff as unwelcoming and a lack of family tradition of using library services (Coradini, 2006; Lynch, 2007). Based on this statement, one of the factors that contribute to the barrier or visiting the library is the distance and transport. Therefore, it can be concluded that the location of a reading place plays a vital role in attracting people to visit the place. Such places should be accessible in walking distance and transportation access especially to cater the needs of young people.

Based on the review undertaken, there are some point could be highlighted in relation to built environment and reading habit. It can be concluded that, in nurturing the reading habit, a reading place should be attractive in design, equipped with interactive facilities, accessible in term of location, and surrounded by comfort and enjoyful environment to attract people coming for reading.

Reading Habit in Malaysia

According Atan Long (1984), the reading interest and habits of Malaysians are very low. Based on his study, Atan Long (1984) found that libraries are not fully utilized due to some reasons which are insufficient time, the presence of other important tasks and unavailability of reading material. Similar results are also found by Frank Small and Associates (1996), Pandian (1997), and the Malaysian National Library (2006). In a survey conducted by the Malaysian National Library (1996) it was found that Malaysian read an average of only two books a year in 1996. However, a survey conducted by the Malaysian National Library in 2006 has revealed that the literacy rate has slightly decreased to 92% from 93% in 1996 (Malaysian National Library, 2006). Based on this result, there has been no increase in the amount of reading as compared to the past ten years.

In year 2010, a survey was conducted by the Malaysian National Library and it revealed that individual Malaysians were reading twelve books annually by 2010 (Malaysian National Library,2010) It is shown that reading rate have improved among Malaysians from year 2006 until 2010. However, statistics revealed that National Library visitors declined from 464,317 in 2010 to 416,672 in 2011(Bernama, 2012). Basically, this is due to changes in reading trends, especially among Generation Y, who are more exposed to sophisticated technologies and smart gadget applications that assist in reading (Bernama,2012). Similar results found by Guthrie (2002) where consumers preferred electronic media such as e-books, search engine websites and digital library for reference purposes. Besides, Long (2003) also found that readers preferred digital books rather than reading from cover to cover of hard copy books as their reference sources. Consequently, the electronic media was found to be more convenient which can save time and money and can be accessible online anywhere and anytime (Roesnita and Zainab, 2005).

Based on the review undertaken regarding Malaysian reading habit, it is found that the Malaysian reading rate is still at the lower level even though there is an improvement on the reading rate in the year 2010. However, there is slightly declination on the National Library visitor numbers. This is due to the changing on the reading trend as the trend shifted from print to digital material. Therefore, it should be a consideration for this research to develop reading

kiosk which considers the present reading trend in order to instill the love to read among the citizens.

Youth and Reading

According to Agnes Nieuwenhuizen (2000), reading does not have a very negative image at all amongst 10–18 year olds; at worst it is slightly nerdy. She also added that the enjoyment of reading for pleasure drops dramatically in teenagers, with 45% of primary students saying they really like reading for pleasure, down to 24% amongst secondary school students. Clearly something happens to the reading experience of young people to make it seem a lot less enjoyable when they reach secondary school than it was in primary school (Agnes Nieuwenhuizen ,2000).

According to American National Endowment (2004) on their study of the literacy reading in America, it showed that teens and young adults read less often and for shorter amounts of time when compared with other age groups and with Americans of the past (American National Endowment , 2004). The survey concluded that young adults are reading fewer books in general and reading is declining as an activity among teenagers (American National Endowment, 2004).Similar result found by India National Book Trust (2012) where three fourth of total literate youth in India do not read books other than their textbooks, be it classics or best sellers. On the other hand, Abdul Khalik (2011), Chief of Bandung Language Center revealed that reading habit is declining among Indonesian youth.

Based on the review undertaken, the reading habit among adolescent had a decrease in many countries such as India, Indonesia, Ireland and etc. Young people had seen reading as a less enjoyable activity. Such a phenomenon could be addressed not only from the role played by parents and teachers, but also need extra attention from the institution such as school and library.

Youth and perception towards library

The 2007 American Harris Poll found that the major reason young people gave for visiting libraries was to borrow books for personal use (78%), for school assignments (67%), to read on the premises or to use the library website for information, research or recreation (34%),or to 'hang out' with friends (18%) (Harris Interactive, 2007).

Abeyrathna and Zainab (2004) also found that secondary school students read regularly outside school hours. This reading however, is mainly confined to textbooks and mainly carried out for the purpose of acquiring knowledge or to study (Abeyrathna and Zainab, 2004). Consequently, the library is used mainly to study or do homework rather than to borrow items to read at leisure (Abeyrathna and Zainab, 2004).

According to McGrath, Rogers and Gilligan (2010) on their study of Irish young people aged 13 to 17 years old towards the library in Ireland, most of the respondents seen libraries as a resource for reading, study and Internet use and, simultaneously, as boring, silent spaces, primarily for older people and younger children. Based on the interview, only one group described them as comfortable, while many, as noted above, stressed their lack of comfort, specifically in relation to seating. Some young people reported experiencing libraries as dark, drab and functional, rather than stimulating and inviting (McGrath, Rogers and Gilligan, 2010).

Based on the review undertaken, it can be concluded that these brief impressions illustrate the contrasting perceptions and attitudes towards libraries held by young people. This

contradicting impression towards libraries could be the barrier for young people to use the library for reading. Therefore, it should be a consideration for this research to cater the needs of young people in nurturing the reading habit among them.

How to attract young people to visit the library?
According to McGrath, Rogers and Gilligan (2010) many public libraries, particularly larger branches in urban areas, have increasingly promoted libraries as places for teenagers to 'hang out', responding to the needs and interests of young people. Based on the report by Ireland National Recreation Policy (2007), the larger public libraries have dedicated zones for teenagers with sofas, CD-listening posts, free Internet access and multimedia and music collections. The availability of these services can draw young people into accessing literature, as well as information relevant to their needs. Public libraries have also undertaken innovative projects such as drama and drumming workshops, specifically aimed at young people' (OMC, 2007, p. 63).

According to Clancey (2007) good internal design can have a significant impact on library use, as well as enabling staff to manage the diverse needs and behaviors of a range of users and age groups. Creating spaces that provide access to a range of materials including magazines, computers, study space, CDs and DVDs and listening posts across a spectrum of ages has been shown to generate interest among young people (Clancey, 2007).

Locating 'teen zones' close to other materials of interest, such as music, magazines, DVDs and computers, allows young people to access a range of materials and to make the transition to full library use (Sissons, 1997). According to ChomhairleLeabharlanna (2004), improving the library collection such as having more CDs and DVDs would convince young people to make more use of public libraries. On the other hand, Blanes (2005) asserted that creation of specialized collections including items appealing to young people's interests such as music, sport, films, fashion, performance and materials such as magazines, comics and young adult literature has been noted to result in higher usage by young people.

Based on the review undertaken, some point could be highlighted to be a consideration for this research. It can be seen that a reading place for teenagers should be designed according to their needs and should be attractive in term of the design and facilities provided in order to attract young people to visit the reading place thus nurturing reading habit among them.

Concept of libraries with various facilities
Many of the countries had developed reading kiosk to nurture the reading habit. The function of the library had been modified by providing such interactive facilities and surrounded by the enjoyful environment to attract the community. The examples of the mini library in around the world demonstrated as follows:

I.   Open-air Library (Refer to Appendix: Image 1)

The Open-air Library Magdeburg was established in 2005 in an abandoned district centre in East Germany and has been started with a public intervention. According to a website, the library was built from recycled beer crates and wood from an old warehouse. Residents were involved in the design, books were donated to fill the shelves, volunteers ran the cafe, and people took part in

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a poetry slam events and book readings. The library is open 24/7 and book borrowing and returning is managed entirely on trust (http://www.archdaily.com/39417/open-air-library-karo-architekten/, 2012)

Based on the review undertaken, the concept of an open-air library is suitable for a young group of people as it offers sports facilities and also reading facilities. People could enjoy reading and also their sport activities at the same time. Previous literature found that young people prefer a reading place which they can actually meet their friend and perform their daily activities together (McGrath, Rogers and Gilligan, 2010). Thus, this concept could be a consideration in designing the concept of reading kiosk as the final output of this research.

II. Incubator Library (Refer to Appendix: Image 2)
Libraries can also be spaces that develop and grow local businesses, support artists and cultural activities or trial other new ways of doing things (Tessa, 2011). One of the examples of incubator library is Library Lab. Library Lab is located in Willesden, UK and it has been set up in the Willesden Green Library Center. According to a website, Library Lab offers free workshops, lectures, a pop-up co-working space and play school aimed at accelerating local entrepreneurship in the Brent community. The play school provides free temporary childcare for those 0 to 4 years old, provided parents remain on site to take advantage of the co-working and/or learning series that The Library Lab provides (http://www.architecture00.net/blog/?p=2163, 2012).
Based on the review undertaken, various services provided within the library could be one of the factors that can attract people for coming. As stated in the previous literature, the availability of various facilities and services can draw young people into accessing literature, as well as information relevant to their needs. (OMC, 2007). Therefore, the library lab concept which offers various services can attract not only for a young group of people for workshop services but also for adults and parents as it provides crèche for their children.

III. Park Library (Refer to Appendix: Image 3)
In Bogota, there are about 50 library kiosks around the city's parks and 100 across the country (www.parklibrarycolumbia.com, 2012). The kiosk called "ParaderoparaLibrosparaParques" or known as "Places in Parks for Books". The mini-libraries are part of a joint program run by the city's parks and a literacy organization (www.parklibrarycolumbia.com, 2012). The kiosks offer people the opportunity to read and borrow books, children can get help with their homework and various activities including book reading and music events bring people together around literacy Volunteers staff the kiosks, helping patrons check out books and organizing activities and homework assistance for kids. The volunteers are onsite 12 hours a week. (http://www.takepart.com/article/2012/06/25/street-corner-libraries-are-all-rage-bogota, 2012)
Locating a reading kiosk within a park area is a brilliant idea to promote reading habit. People could enjoy reading in a surrounded greenery environment. Developing reading kiosk in a park area can attract many groups of people as the park is commonly visited by the community to have their leisure activities. While performing those activities, people also can enjoy reading hence promoting communication among them.

IV.   Uni Project (Refer to Appendix: Image 4)

According to a website, the Uni Project is a portable reading room which aimed to temporarily transform almost any available urban space into a public reading room and venue for learning. Uni structure is based on a system of 144 open-faced cubes and it can be installed in different configurations or heights to create an inviting space for people to gather in public. (www.uniproject.com , 2012). The Uni collection consists of new and gently-used books and materials donated to the Uni and it was managed with the help of a team of volunteer librarians, the goal is to offer an engaging collection of books and learning experiences to an urban audience, children and adults alike (www.uniproject.com , 2012). The collection is organized into modules that help librarians adapt the Uni to different locations and communities, and even change the content over the course of a day (www.uniproject.com , 2012).

As mentioned in the previous literature, young people especially have contradicting impressions towards the library (McGrath, Rogers and Gilligan, 2010). Previous literature also mentioned that young people would prefer to have an informal environment for reading such as allowing them to talk, having music, meal and etc. In order to address the issue, developing temporary reading facilities in public areas could be one of the approaches to attract that group of people to read as it offers reading facilities within this environment which preferred by the young people. Moreover, this idea also can promote reading as a leisure activity as it might attract the visitors who are surrounding that area to come for a reading.

V.   Virtual Library (Refer to Appendix: Image 5)

In Austria, virtual library had been promoted to nurture the reading habit. The virtual library had contained in public QR code stickers and 70 stickers are placed in public locations such as bus stops, containing QR codes and NFC technology that enable citizens to download e-books. The project seeks to make literary classics more easily available to citizens of the city, which currently does not have a public library. According to Mark (2012) the users of virtual library, some 70 recognizable yellow stickers have been placed in locations around Klagenfurt mostly at the bus stops courtesy of support from STW Mobilitat and passersby can either hold their Smartphones next to them or use a QR code reader to be directed towards one of 70 different titles.

As mentioned by Guthrie (2002) in previous literature, consumers preferred electronic media such as e-books, search engine websites and digital library for reference purposes. Besides, Long (2003) also found that readers preferred digital books rather than reading from cover to cover of hardcopy books as their reference sources. Therefore, virtual library could be one of the possible approaches to promote reading as it supported the current reading trend.

Based on the review undertaken on the concept of mini library in another part of the world, some design criteria have been outlined. Figure 1 (refer to appendix) indicates the mind map of design criteria formulated based on the review undertaken on the concept of mini libraries as applied in other countries. These design criteria as outlined from this study will lead to the formulation of the questionnaire for this research thus leading to the recommendation on the concept of reading kiosk for the case study.

RESEARCH METHODOLOGY

The overall research design involves four main stages. The four methods have been identified based on literature review and they have also been selected and adopted according to the appropriateness of the stages. For problems identification, content analyses have been utilized in explaining and identifying problems, the study is utilizing and analyzing the contents. Journals, books, theses, reports and documents have been collated and analyzed according to the related topic. Identification of problems, and areas less researched have been the focus of this content analysis.

The stages are Preliminary Study, Data Collection, Analysis and Conclusion. At the preliminary Study stage, it has analyzed the content of the literature. The second stage which is Data collection, methods adopted are observations, questionnaire surveys, interviews and focus group discussion. Analyses of data have been conducted using tabulation approach where it involved Microsoft Excel, SPSS, etc. The last stage which is recommendations and conclusions will be drawn based on the findings of the analyses.

Data Collection

Survey and questionnaires had been designed to collect the data. The population is the secondary school students and the samples are the students of SMK Bandar BaruSentul and SMK Gombak Setia aged between 13 to 17 years old. Total sample size is 300 students at two secondary schools. There were 150 questionnaires were distributed to the students in SMK Gombak Setia and 150 questionnaires forms were distributed to the students at SMK Bandar BaruSentul.

Stratified random sampling had been chosen as the method of sampling where the population is stratified into a number of non overlapping sub-populations or strata and sample items are selected from each stratum. The samples were selected randomly and it was deemed that students of SMK Bandar BaruSentul and SMK Gombak Setia were having the same opportunity to be selected as the sample in this study.

Instruments

The data had been collected by using a questionnaire and the questionnaire comprises of four sections. The first section is designed to capture the respondents' demographic including gender, age, hobby, parent's household income, and the favorite activities after the school day. The second section is designed to capture the attitude of the respondents towards the library as a place for reading including their feelings about the library in term of facilities, services, location, interior and exterior design and etc.

The third section is designed to capture the perception and attitude of the respondents towards reading as an activity including the time spent in reading, preferred reading material, preferred subject, reading purpose, and reading motivation.

The last section is designed to capture the preferences of respondents towards the environment of the reading places are referred to reading kiosk including the facilities, environment, services, location, management, and operation.

Analysis of Data
The analyses will be both descriptive and inferential in nature. Data entry and analysis were conducted to provide some inputs to the overall discussions of the survey results. At the final stage, some conclusions were drawn based on data synthesis, findings and other results of researches elsewhere.

CONCLUSION

This study outlines the five important elements relevant to the literature. First, it has discussed the various definitions of reading and the Malaysian reading trend as compared to the other countries. It has also extracted four fundamental variables explaining the factors that influencing the reading habit. Several major thoughts have been distinguished with regards to the factors associated with reading habit; gender, location (urban and rural), types of reading material, time spent in reading, reading purpose and reading motivation . However, there are no studies being conducted in proving that built environment are also playing their roles in influencing the reading habit. Therefore, the review has identified the gap which is built environment as one of the external factors that influencing the reading behavior.

Essentially, the review has substantiated the need for this research. It is still unclear that the built environment influencing the reading habit. It is therefore be the interests of this research to investigate the relationship between built environment and reading habit thus proposing the concept of reading kiosk as a final output of this research.

Review undertaken also had confirmed four fundamental problems; Malaysian reading rate is still at the lower level, reading is declining as an activity among teenagers, some teenagers had a bad impression towards libraries, and the library was used by school students to study rather than for leisure reading.

Lastly,the literature had also identified several approaches and concepts of reading kiosk being applied in other countries to promote reading activity among the citizens. This study and review might be helpful in formulating recommendations on the concept of reading kiosk as a final output of this research.

ACKNOWLEDGEMENTS

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APPENDIX

Table 1 : Matrix on factors associated with reading habit by previous researchers

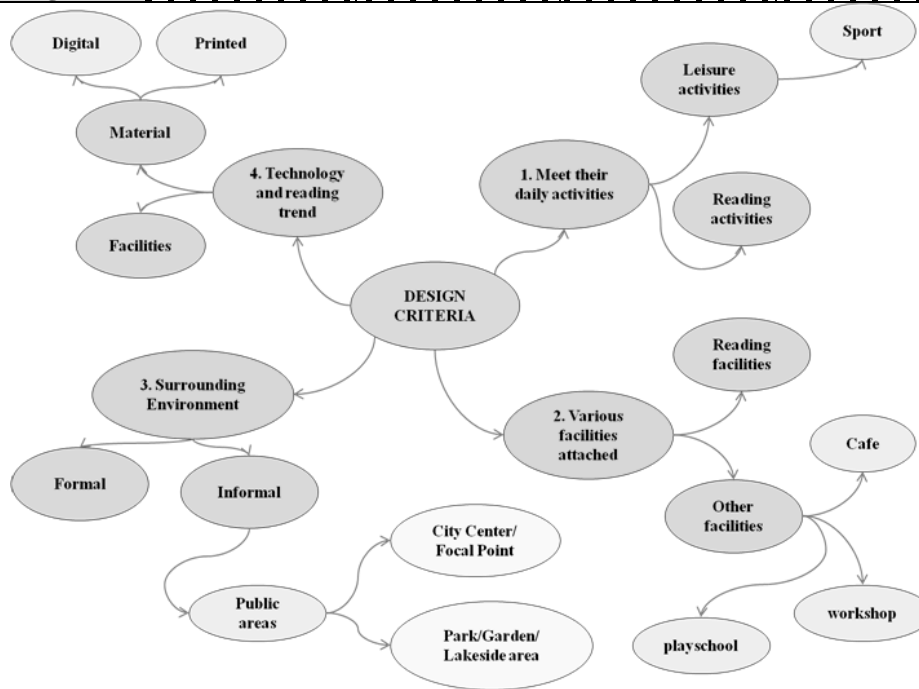|	READING HABIT			
	Time Spent for Reading	**Reading Purposes**	**Reading Motivation**	**Reading Material**
Gender	Hastings and Henry (2006)	Zainab(1977) Chai(1996) Abilock(2002)	Clark and Foster (2005)	Moffit (1992) and Simpson (1998)
Location (Urban and Rural)	Fayaz (2011)	Fayaz (2011)	Fayaz (2011)	Fayaz (2011)
Built Environment (Interior Exterior Design)				

Research Gap

Figure 1 : Mind Map of Design Criteria

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Image 1 : Open Air Library, Magdeburg

Image 2 : Library Lab, Willesden

Image 3 : Park Library, Columbia

Image 4 : Uni Project, New York City

Image 5 : Virtual Library

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ASSESSMENT OF STUDENTS' INDEPENDENCY IN HERITAGE STUDIES

Fadzidah Abdullah[1] and Md. Mizanur Abd Rashid [2]

ABSTRACT

Independency in learning is crucial to ensure students' success in completing the course of AAR 3302: Heritage Studies. The course is considered as the capstone course of architectural educational programme in the International Islamic University Malaysia (IIUM). This research aims to assess students' independency in conducting their self-directing learning while doing the field work and studio work of Architectural Heritage Studies Course. This research has the objectives to examine students' independency in carrying out the designated tasks, and to investigate how application of knowledge and skills has been performed by students, with minimum involvement of their lecturers. The field work was carried out on building sites in Malaysia, Bangladesh, Indonesia, and Iran. Whilst the studio work, where students documents all their findings, were carried out in International Islamic University Malaysia. Quantitatively, survey was conducted by distributing questionnaire among students who enrolled in the course. Their self-assessment was sought after they had completed the course and they had clear ideas how the whole mechanisms of the course work. This research concluded that students could work independently during planning stage, field work stage, production stage, and exhibition stage of heritage study course. The research also concluded that students rate themselves as good and very good in soft skills proficiency. This research is significant in determining the quality of students' independency levels in managing their learning affair within multi-dimensional experience. The achievement of the course to produce independent students is essential to fulfil the urge of producing competent graduates.

Keywords: Architecture Education, Independent Learning, Self-directed Learning, Heritage Studies, Assessment of Independency.

INTRODUCTION

The course AAR 3302: Heritage Studies is considered as the capstone course of architectural educational programme of Bachelor of Science in Architectural Studies, conducted in Kulliyyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia (IIUM). Thus, while undertaking this course, students need to portray their independent ability to engage in the application of accumulated architectural knowledge and skills, which they should have obtained throughout their three (3) years of study duration.

Based on the objectives of the course, independency in learning is crucial to ensure the field work and various stages of studio works are successfully done. Upon completion of the field work in various sites in the four (4) countries; Malaysia, Bangladesh, Indonesia, and Iran; students would continue working on their heritage studies in studio environment, where they produced follow-up documentation in various forms; such as drawings, report, archival materials, and multi-media presentation.

This research is continuation of research done in 2007, titled: Approaching Islamic Architectural Studies through Problem Based Learning, where students' learning process in Heritage studies was discussed. However, the former research did not include any empirical finding to validate the level of independency among students. On the other hand, this research is significant in determining the quality of students' independency levels in managing their learning

affair within multi-dimensional experience. The achievement of the course to produce independent students is essential to fulfil the urge of producing competent graduates.

This research aims to assess students' independency in conducting their self-directing learning while doing the field work and studio work of Architectural Heritage Studies Course.This research has the following two objectives. The first objective is to examine students' independency in carrying out the designated tasks in both field work and studio work of Heritage Studies class. Secondly, to investigate how the application of knowledge and skills have been performed by students, with minimum supervision of the lecturers.

LITERATURE REVIEW

Background of the Course

The Ministry of Higher Education (MOHE), Malaysian Quality Assurance (MQA) and LembagaArkitek Malaysia (LAM, translated as Council of Architects Malaysia) require all educational programmes to comply with their requirement of having course that enhances students' continuous and independent learning. Thus, IIUM in general formulate its Teaching and Learning Taxonomy compassing all knowledge inquiries domains; that are Cognitive, Psychomotor, Affective and Social domains.

Accordingly, the course of AAR 3302: Heritage Studies is designed to comply with the set requirement. The first two (2) expected learning outcomes of the course focus on technical aspects of architectural skills, while the third (3rd) emphasis on soft skills, as part of fulfilment of MQA requirement. Thus, upon completion of the course, students should be able to do the followings (DoA, 2010): apply the skill and methodology in surveying and recording period or current existing buildings focusing on Islamic heritage for the purpose of conservation works; and apply various method of documenting the Islamic heritage buildings and the built environment through measured drawing, report, short book, photo album, video, catalogue and 3D model to be presented in an exhibition.

Concurrently, development of soft skill is also essential to ensure graduates have the employable quality, and/or able to manage their own continuous professional development. Among the soft skills required are Communication Skills; Critical Thinking and Problem Solving skills; Team Work Skills; Life Long Learning and Information Management; Entrepreneurial skills; Professional Ethics and Moral; and Leadership Skills.

Framework of Independent Learning

Candy (1991; cited in Forster 1972) in his article "Self Direction in Lifelong Learning," defines independent study as a process, a method and a philosophy of education; in which students acquire knowledge by his or her own efforts and develops the ability for inquiry and critical evaluation. He further explains that students have the freedom of choice in determining their learning process and objectives, within the limits of a given project or programme and with the aid of faculty advisors. This method increase students' educational responsibilityfor the "achieving of objectives and for the value of the goals".

Meanwhile, the CIEL Project (2000) describes learners' independence or independent students move away from dependence on teachers, by embarking on the followings:

1. Take responsibility for their learning and learn to learn.

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2. Develop key transferable skills; such as study and time management, IT skill and interpersonal skill.
3. Manage their learning actively and seek learning opportunities by using appropriate learning strategies.
4. Involve in an iterative process in which they set short and long term learning objectives, reflect on, and evaluate progress.

Independent learning can mean different things to different people, in different disciplines and in different culture (The Higher Education Academy, 2011). In architectural education, independent learning has been associated with the so called Problem based Learning and Project Based Learning(De Graaff&Cowdroy, 1997; Kolmos, 2003; Webster, 2002), where students independently solve learning and architectural problems by having training via developmentof experiences (Fadzidah Abdullah, 2006). Here, architectural education has transformed gradually from being a teacher-centred method to a student-centred method.The change from the use of the word "teaching" to "learning" emphasises the importance of students' independent learning in architectural education, specifically in the course of heritage study.

Assessment of Students
Assessment and evaluation of students' work are very important for students and teachers (Gonzalez, 2010). Assessment can be used to encourage students' interest and their commitment to the study of the subject. Assessment also provides academic challenge, enhance independence, and cultivate responsibility in learning. It is important for students to know their overall progress to make long range plans. The assessment of students who learn independently should ideally be valid, reliable, practicable, fair and useful to students.

According to Henry and Shirly (1997), there are two modes of assessment; formative assessment, and summative assessment. Formative assessment is the assessment which is carried out during a program of instruction and does not count towards final grade, mark or award. It is normally used to determine whether the learner will be allowed to progress to later stage of a course/subject. Meanwhile, summative assessment is the assessment that is carried out at the end of a program of instruction or section. This assessment generally does count towards a final grade, mark or award or to determine whether the student is allowed to make progress through the course (Henry, et. al, 1997).

Self-assessment of Independency in Learning
There are few methods that could be used to assess students' independency in learning. There are peer assessment, self-assessment, and continuous assessment.However, in accordance to the objective of this paper, only method of self-assessment would be further discussed.
Self -assessment involves students participating in the assessment of their own work, by extensive use of the self- assessment questions or SAQ's. This is to provide students with on-going feedback on their progress (Henry, et. al, 1997). This type of assessment has a key role to play in the formative assessment of students, and especially in the course that involved working through self-study materials.According to Henry, et. al, (1997), there are some of the specific contexts in which such assessment could be implemented, as follows:
1. in open and distance learning courses

2. In flexible-learning components incorporated in otherwise traditional courses
3. In the assessment of student assignments
4. In the assessment of group work of all types
5. For continuing professional development (CPD) purposes

In this research, self-assessment is not used for the students' grades, but to assess students' independency in conducting their self-directing learning while doing the field work and studio work of Architectural Heritage Studies Course.

Advantage of Self-assessment
Rolheiser and Ross (2006) perceive that when students evaluate their performance positively, they are actually encouraged to set higher goals and seek more personal resources or effort. The combination of goals and efforts equals achievements. The student's achievement results in self-judgment and the result of the self-judgment is self-reaction. Goals, effort, achievement, self-judgment, and self-reactioncould be combined to give impact on students' self-confidence. The diagram shown below illustrates how self-assessment contributes to learning.

Figure 1*: Illustration on how self-assessment contributes to learning
(adapted from Rolheiser& Ross, 2006).*

There is sufficient evidence that self-assessments contributesto student achievement. Ross (2006) suggests that most students prefer self-assessment to assessment by teacher alone. Self-assessment leads students to have better understanding of what they are supposed to do because they are involved in setting the criteria for the self-assessment. Self-assessment is viewed as fairer, because it enables students to include important performance dimensions; such as effort, that would not usually included in grading system. Besides, self-assessment also allows students to communicate information about their performance and give them information they could use to improve their work.

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RESEARCH METHODOLOGY

Methods and Respondents

Quantitatively, survey was conducted by distributing questionnaire among students who enrolled in the course of AAR 3302: Heritage Studies.The survey consisted of questionnaires, that soughtstudentsself-assessment on their independency in learning. The questionnaires were distributed at the end of the semester after students had completed all the required tasks for the course. In this instance, students had already had clear ideas how the whole mechanisms of the course work.

The survey was done to achieve objective (1) and (2) of the research; to examine students' independency in carrying out the designated tasks in both field work and studio work of Heritage Studies class; and to investigate how application of knowledge and skills have been performed by students, with minimum involvement of academicians/lecturers.

Questionnaires were distributed among architectural students who took the course in Semester 3, session 20011/2012. Ninety nine (99) 3rd. year students from architecture department in the faculty registered for this course in that particular semester. All (100%) architectural students undertaking the course responded to the survey, with n = 99.

Thirty two (32) questions were formulated, which were categorised into two (2) main sections or categories. Section A focuses on students' opinion of their independency in carrying out the designated tasks in both field work and studio work. This section attempts to seek the answer via students' self- assessment. Sixteen (16) questions are presented in this section.Section B focused on seven (7) soft-skills required by MOHE to be applied to all course in tertiary educational program. Another Sixteen (16) questions are presented in section B.

Limitation of Research

Originally, this research intended to have small scope of students' experience of doing heritage study in Bangladesh only. However, chances had come to distribute questionnaires to students who did field work in other countries as well. Thus, the scope has been widen into analysing bigger statistical data, yet eliminated observation discussion in this report. Thorough discussion on observation is not to be done due to the following reasons:time limitation, limitation of assess to students' handbooks, and limitation of budget allocation.

ANALYSIS AND FINDINGS

Demography Data

Table 1show the Percentage of male and female students as respondents of this research, whilst table 2 shows major task group and place of field work.

Table1 :*Percentage of male and female students*

Gender	Frequency	Percentage
Male	47	47.5
Female	52	52.5
Total	99	100.0

Table2 :*Major task group and place of field work*

Place of field work	Major task group				Total
	Technical Team	Catalogue Team	Report Team	Multimedia Team	
Masjid Sultan Abdullah, Pahang, Malaysia	7	2	4	3	16
Masjid SunanAmpel, Surabaya, Indonesia	5	3	2	3	13
Masjid SunanGiri, Surabaya, Indonesia	6	2	3	4	15
Dewan-i-Aam, Dhaka, Bangladesh	6	4	7	1	18
Mosque, Dhaka, Bangladesh	3	1	2	4	10
Haghighi House, Esfahan, Iran	12	4	4	7	27
Total	39	16	22	22	99

Table3 :*Task and responsibilities for every group*

Major Task Group	Tasks and Responsibilities
Technical Team	- Model making - Produce technical drawings (2D and 3D) - Measuring (on site) - Produce sketches, detail drawings and section-elevation - Responsible on the equipment during site visit
Catalogue Team	- Tagging items (picture and videos) - Produce log book - Financial controller - Standardize all the format for cataloguing - Filing work
Report Team	- Research/ collect data and info on the building studied - Report writing and editing (layout, contents, etc). - Secretary tasks - Conduct survey and interviews - Documentation/ compilation all of the data - Assist other teams for exhibition
Multimedia Team	- Documenting students work in multimedia - Recording interview - Assist technical team to take photograph of the respective building (elevation and perspective) - Produce photo book - Prepare presentation board and photos' description - Script writer/ narrator

Students' Opinion on their Independency

Planning Stage

The mean for students' opinion on "they manage the planning and preparation of heritage studies course with minimum supervision from lecturers" is 5.00 means they are slightly agree with the statement. The mean for students' opinion on they make decision of the place of visit without influence from their friends and lecturers is 3.99 means they are neither agree nor disagree with the statement. This result shows that some student make their own decision of the place of visit without influence or opinion from their friends and lecturers while some of them still need opinion from their friends and lecturers prior to the place of visit. The mean for students' opinion on they are voluntarily seek for relevant knowledge and skills prior to the visit is 5.68 means they are agree with the statements while the mean for students' opinion on they do not expect to have answers of their inquiries/curiosity from their lecturers, but did research on it is 5.30 means they are slightly agree with the statement. Based on the result can be concluded that the students can work independently on planning stage without much supervision from their lecturers. However, they still need the influence from their friends and lecturers in making decision of the place of visit.

Field Work Stage

The mean for students' opinion on they independently apply their knowledge and skills with minimum supervision from their lecturers is 5.40 means they are slightly agree with the statement. The mean for students' opinion on they discuss with their team mates for decision on problems encountered is 6.48 means they are strongly agree with the statement. While the mean for students' opinion on they think seeking for lecturers' guidance shows their weakness and incapability is 3.36 and mean for students' opinion on they think students could have the visit without accompanied lecturers is 2.49 means they are slightly disagree with the both statements. Based on the result, can be concluded that the students can work independently on field work stage but they still need the lecturer's guidance and to have accompanied lecturers during the visit.

Production Stage (Studio Work)

The mean for students' opinion on they discuss with their team mates prior to commencement of new task is 6.20 means they are agree with the statement. The mean for students' opinion on they make most of the decision regarding their work is 4.93 means they are slightly agree with the statement. The mean for students' opinion on they consider their self as a leader than a follower is 4.24 means they are neither agree or disagree with the statement. This result shows that some of the students consider themselves as a leader but some are not. While the mean for students' opinion on they prefer to seek feedback from their lecturers after work completed, rather than asking for guidance prior to commencement of work is 5.18 means they are slightly agree with the statement. Based on the result, it could be concluded that the students can work independently on production stage (studio work) without much supervision from their lecturers.

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Exhibition Stage
The mean for students' opinion on they and their friends manage the exhibition with minimum supervision from their lecturer is 4.88 means they are slightly agree with the statement. The mean for students' opinion on they are satisfied with their job performance in this course is 6.12, means they are agree with the statement. The mean for students' opinion on they think this course has equipped them with all the required skill for them to work as assistant architect is 5.95 and the mean for students' opinion on they think they can manage similar task and event when they leave the university is 6.15 means they are also agree with the both statements. Based on the result, can be that the students can work independently on the exhibition stage.

Students' Opinion on their Soft Skill Proficiency
Communication Skills
The mean for students' opinion on they and their friends manage the exhibition with minimum supervision from their lecturer is 4.88 means they are slightly agree with the statement. The mean for students' opinion on they are satisfied with their job performance in this course is 6.12, means they are agree with the statement. The mean for students' opinion on they think this course has equipped them with all the required skill for them to work as assistant architect is 5.95 and the mean for students' opinion on they think they can manage similar task and event when they leave the university is 6.15 means they are also agree with the both statements. Based on the result, can be that the students can work independently on the exhibition stage.

Critical Thinking and Problem Solving Skills
The mean for students' skill on the ability to present ideas clearly, effectively and confidently in both oral and written forms, the ability to practice active learning skills and provide feedback and the ability to present clearly with confidence and appropriate to the level of listener is 5.06, 5.25 and 5.22 respectively. This means that the students rate themselves as good and can be concluded that they are good in communication skills.

Team Work Skills
The mean for students' skill on the ability to built good relations, interact with others and work effectively with them to achieve the same objectives and the ability to understand and interchange roles between that of a team leader and team member is 5.70 and 5.64 respectively. This means that the students rate themselves as very good and can be concluded that they are very good in team work skills.

Lifelong Learning and Information Management
The mean for students' skill on the ability to search and manage relevant information from different sources and the ability to accept new ideas and the capability for autonomous learning is 5.47 and 5.65 respectively. This means that the students rate themselves as very good and can be concluded that they are very good in lifelong learning and information management skills.

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Entrepreneurial Skills

The mean for students' skill on the ability to identify business opportunity is 4.91 means that the students rate themselves as good. As the result shown, can be concluded that the students are good in entrepreneur skills.

Professional Ethics and Moral

The mean for students' skill on the ability to recognize the effects on the economy, environment and socio culture in professional practice and the ability to analyse and make decision in solving problems related to ethics is 5.20 and 5.423 respectively. This means that the students rate themselves as good and can be concluded that they are good in professional ethics and moral skills.

Leadership Skills

The mean for students' skill on the knowledge of the basic leadership theory, the ability to lead the project and the ability to supervise team members is 5.40, 5.11 and 5.25 respectively. This means that the students rate themselves as good and can be concluded that they are good in leadership skills.

CONCLUSION

Generally, students felt that the course named Heritage Study has enhanced their independency in carrying out the designated tasks in both field work and studio work of Heritage Studies class. Students also felt that the course has embedded all the soft skills needed for their graduation purposes.

Based on the findings, the conclusions are made for section A:Students' Opinion on their Independency, as the followings:

1. Students' Opinion on their Independency during the Planning Stage – Based on the result can be concluded that the students can work independently on planning stage without much supervision from their lecturers. However, they still need the influence from their friends and lecturers in making decision of the place of visit.

2. Students' Opinion on their Independency during the Field Work Stage –Based on the result, can be concluded that the students can work independently on field work stage but they still need the lecturer's guidance and to have accompanied lecturers during the visit.

3. Students' Opinion on their Independency during the Production Stage (Studio Work) – Based on the result, it could be concluded that the students can work independently on production stage (studio work) without much supervision from their lecturers.

4. Students' Opinion on their Independency during the Exhibition Stage –Based on the result, can be that the students can work independently on the exhibition stage.

Based on the findings, the conclusions are made for section B:Students' Opinion on their Soft Skill Proficiency. They are as the followings:

1. Students Opinion on their Communication Skills – Based on the result students rate themselves as good on the ability to present ideas clearly, effectively and confidently

in both oral and written forms. Thus, it could be concluded that they are good in communication skills.

2. Students Opinion on their Critical Thinking and Problem Solving Skills–Based on the result, students rate themselves as good on the ability to identify and analyze problems in complex and vague situations as well as to make justified evaluations. They are also have good ability to develop and improve thinking skills such as to explain, analyze and evaluate discussions; and the ability to find ideas and alternative solutions. Hence, it is concluded that they are good in critical thinking and problem solving skills.

3. Students Opinion on their Team Work Skills – Based on the result, students rate themselves as very good and can be concluded that they are very good in team work skills.

4. Students Opinion on their Lifelong Learning and Information Management – Students rate themselves as very good and can be concluded that they are very good in lifelong learning and information management skills.

5. Students Opinion on their Entrepreneurial Skills –Based on the result, students rate themselves as good on the ability to identify business opportunity for collecting fund to support their heritage studies trip expenses. As the result shown, can be concluded that the students are good in entrepreneur skills.

6. Students Opinion on their Professional Ethics and Moral – Students rate themselves as very good on the ability to recognize the effects on the economy, environment and socio culture in professional practice and the ability to analyse and make decision in solving problems related to ethics.

7. Students Opinion on their Leadership Skills – Based on the result, students rate themselves as good on the knowledge of the basic leadership theory, the ability to lead the project and the ability to supervise team members.

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LESSONS FROM LIVE PROJECT: A CASE STUDY ON A LANDSCAPE PROJECT OF AN INSTITUTION

Jamilah Othman and Khairuddin Abdul Rashid

ABSTRACT

This paper evaluates the authors' experiences in supervising a construction of a landscape project of an institution. The works involved an upgrading of the landscape and hardscape of the main entrance, while the supervision was originally devised by several lecturers. The live project provided good impacts to both students and lecturers. For instance,live project with real problems and client has strengthened students' practical knowledge.Secondly,live project has provided experience and knowledge for better teaching/learning of built environment subjects. It was an urgent project and thus, dateline was highly important. Though the construction had completed on time, there were complaints received; e.g. issues on the quality and project cost. These unsuccessful parts of the construction were perhaps related to several reasons such as Coordination Meetings (CMs), professionalism and ethics, and Statement Needs (SNs). This paper uses evidences drawn from site supervisions and discussion with expert/colleagues in reviewing the factors that would link to the issues. Review presents several findings, which are leading towardsthat; lack of skilled workers, ineffective coordination and lack of responsibility and commitment and etc. The paper suggests that good Construction Practices (CPs) can be achieved through good coordination among construction teams, organised CMs, and definite SNs. The ideas can perhaps be considered for future construction with similar nature of work. Further, the insights may also contribute significant implications toseveral individuals and organisations, namely stakeholder, Superintendent Officer (SO), academicians, students, contract workers, project cost, quality of works, project dateline and many more.

Keywords: Live Project, Case Study, Coordination Meetings (CMs), Professionalism and Ethics and Statement of Needs (SNs)

INTRODUCTION

Initially, several lecturers had mentored the second year students preparing the design ideas (e.g. conceptual design up to Master Plan). The design activity had lasted for a period of one month, while the construction works had taken for about three months time. It is agreed that the supervision activities have provided good implications to the educators in the built environment discipline. For instance, fresh ideas acquired on site allow more meaningful education to be conveyed in a design studio or classroom. It is believed that effective teaching method would be achieved, if both real and theoretical knowledge are made available to students. Secondly, getting involved in a live project can enhance the practical knowledge of both lecturers and students.

Here, the authors would like to present their experiences in supervising a construction of live project from the unsuccessful side of it. Taking note that *"Live Projects should value failure……."*(Chiles, and Holder, 2008), and it is rationale to set a culture that failure is not necessarily bad. This is one of the aspects in the construction thought worth reviewed in. Thus, errors that occurred in the construction can be identified and rectified for future benefit. Based on this, all the construction participants should have bear in mind that all projects may not always end up with successful results.

As an academician, the task of supervising the project was quite challenging due to time constraint that resulted from teaching work load. So, supervision activities could only be carried out, when the lecturers were not having a class during certain days of a week. This explains that there was no specific schedule designed to cater for the purpose. Site visits were mostly depending on the availability of time and the urgency to oversee the works progress together with the methods of implementing the construction works. On the other hand, both complaints on the quality of works delivered and the project cost can be accepted as project's failures. This paper then reviews the potential issues believed to indirectly implicate the results of the project, taking site supervision as the main evidences and to build on these some lessons for years to come.

OBJECTIVE AND SCOPE

The purpose of this paper is to review the results of the landscape construction of an institution having focused on the specific issues thought to implicate the quality and cost of the project delivered. It discusses how good Construction Practices (CPs) can be accomplished through regular and organised Coordination Meetings (CMs), finalised Statement of Needs (SNs) and good practices of professionalism and ethics. The paper consists of three specific objectives.

The objectives are to:
i) present a case study that demonstrates authors' experiences in supervising a construction of live project
ii) review several potential issues that implicate the results of the project
iii) evaluate the issues that correlate to the unsuccessful of the project

METHODS

The data acquired from site supervision and discussion with expert and colleagues are difficult to evaluate because they depend largely on authors' judgement. Further, the sensitivity of some data creates limitation in the review and discussion. Despite all that, there are evidences from the literature provided to support the authors' viewpoints. Generally, personal observation was the main method used to collect data, while the discussion with experts/colleagues was used to support the main data.

Personal observation - Site supervision

The activity involved collaboration of several teams and this included a list of participants that varied from management staff, lecturers, contractors and contract workers. Since the project was important and urgent, this placed huge responsibility on each of the teams' members. It is observed that the successful of the project would very much dependon the good support of each individual. In the context of professionalism and ethics, this explains the importance of being committed and responsible for one's tasks based on individual's job scopes. Low commitment and lack of responsible were the constraints observed to influence the results of the project.

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Conflict of interest was another issue thought to contribute to these. For instance, when a decision was made, the results should be then made known to all of the construction teams. Next, it is observed that good CPs could also be achieved through well-coordinated working environment. Here, regular CMs were recognised as the best tool to monitor the overall work progress and the manners of how the construction should be carried out. Series of organised CMs found to be lacking during the supervision period, though their role to the successful CPs was important. This is true when meetings are considered important and accepted as a primary planning mode in the process of planning during construction (Dora, Laufer, Shapira and Howell, 1994).

In another case, some stakeholders may not realise that there are risks, if the SNs are unclear or indefinite. Not being clear or changing of the needs from time to time would lead to uncertainties of job scopes and Variation of Order (VO); would result to an increase of a project's cost. This shows that besides financing a project, there are also others roles need to be considered for the successful of a project. Interestingly, the issue has been comprehensively described in Xiaojin, and Jing (2006). Both authors agree that stakeholders have the most important role in ensuring the successful of a project. For instance, based on personal observation, relevant decisions were thought necessary, so that, conflicts in the decision making resulted from indefinite SNs could be minimised on site.

Conflicts would also arise, due to these factors; e.g. unavailability of construction supplies or additional / change of job scopes or specifications. In other words, the confirmed works instructions were crucial in the project with the status of urgent. Another potential issue that might lead to failure could also be directed to unavailability of skilled workers. The urgency of acquiring skilled workers was detected in some specialised planting works concerning slope area. So, comments received on the poor quality of work and increased of project cost have basis to these. In summary, the **Table 1** presents the relevant issues that were personally experienced and observed on site.

Table 1: *List of issues observed during site supervision*

No.	General Issues	Specific Issues	Implications
1.	Lack of Coordination Meetings (CMs)	• poor coordination and communication among construction teams • conflict in making decisions on site • unclear instructions to be executed on site • miscommunication among construction teams	a. delayed in making decision and work progress b. provided inaccurate specifications c. affected quality of works delivered
2.	Unacceptable Conducts in Professionalism and Ethics	• Lack of commitment, support, and responsibility • Conflict of interest when involved authority imposition • Unable to provide right expertise as demanded in job scopes	a. affected quality of decisions made on site and works delivered b. sacrificed the good service to the public c. wastage of construction materials and money d. unavailability of supplies
3.	Unclear Statement of Needs (SNs)	• Change job scopes • Lack of written instructions	a. Risks to project in terms of cost and quality

Discussion with expert/colleagues

For the purpose of discussion, two experts from the field of quantity survey were consulted. Their knowledge and experience in the construction industry wereused to validate on the good construction practices, On the other hand, colleagues from the disciplines of architecture and landscape architecture had provided information on the manners of how coordination meetings, statement of needs and professionalism and ethics are best fit into the scenario. The selection of the experts and colleagues was based on the numbers of year involved in the construction industry. The minimum requirement was at least two years of professional working experience.

BACKGROUND OF LIVE PROJECT WITH LESSONS TO LEARN

The project was commissioned and funded by the same institution.The idea was to enhance the entrance by re-branding the landscape and showcasing it to visitors. At the same time, the students of the built environment discipline can benefit from the project. The landscape would become an 'outdoor laboratory' that provides specific knowledge on the planting materials as well on the methods of constructing certain hardscape elements. Importantly, the project was initiated as a student project, where a group of second year students together with two fresh graduates were involved in preparing the initial design concepts and ideas. This approach was mainly meant to expose students to real design problems, so that, the practicality of the theoretical knowledge learnt can be tested on the ground.

Having finished mentoring the design work, three lecturers of the same group had voluntarily helped supervising the construction activities. Though many believe that the project is unsuccessful, there are several lessons worth discussed here. Live project is seen as the key to solid professional education, technology search, notion of construction management strategies and many more. These are among the plural results that were discovered from the real site, client and budget. The practice shows that the concept of isolation between theoretical and practical education in the built environment institutions may no longer relevant to this era. Perhaps, the so called 'intellectual labour' can best describe the paradigm, where effective teaching is found to correlate to live project.

For instance, in the West, live projects have been commonly adopted in the design based education (Sara, 2006). Perhaps, this concludes that live project is important towards solving the real and future construction problems. Further, skills, and pure intellectual information acquired from the live project would assist lecturers in the making of better accredited built environment programme. They build confidence among lecturers through clear ideas or understanding and provide clear direction for future education system. In the context of Construction Practices (CPs), the real issues of live project can become the models to be considered for the betterment of such industry.

Live project should then be recognised as the platform, where critical thinking, creativity or practical techniques of managing a construction can be explored. Engaging with the live project creates good culture among the educators, for it allows many theoretical ideas to be tested on ground. This is somewhat to balance up the differences between the theoretical education and practical demands. Thus, underpinning the practice of live project provides incentives to both academicians and students in the built environment discipline.

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REVIEW OF POTENTIAL ISSUES CONTRIBUTING TO PROJECT'S FAILURE

Here, the real issues have concerned on the quality and cost of the project delivered. It is understood that the landscape of the main entrance has failed to portray the right ambience as what the institution expected in the first place. If the project has been perceived to be unsuccessful, thus, the potential issues that lead to it should be identified and reviewed. Based on evidences drawn from personal observation (site supervision) and discussions with experts/colleagues, the findings present several key issues that indirectly had affected both the quality and cost of the project.

Coordination Meetings (CMs)

It seems particularly important to plan, schedule and manage necessary meetings throughout the construction process. The practice offers opportunities to project participants to communicate and interact with direct contact on matters that concern day to day planning process. It was observed that, CMs with proper scheduled would have minimised conflicts in making decisions on site or off site. This explains the role of the meetings in the context of primary planning mode. Several site meetings were occasionally held during the construction and found to be effective in solving urgent construction issues in situ; e.g. site clearing activities, construction supplies and etc.

In short, regular CMs were relevant in the sense that they were sometimes able to resort issues relating to undefined job scopes, unavailability of construction materials, shortage of manpower, methods of constructing unique landscape works and etc. However, the number of CMs conducted during the construction period found to be limited. Lack of meetings observed to implicate the coordination among the construction teams, especially on matter that associated with daily construction works. The scenario presented here has rationale to influence the quality of landscape and hardscape delivered as well as the cost of the project.

Professionalism and ethics

Here, the authors relate ethics to either good or bad and right or wrong conducts, while professionalism explains the need to provide good service to the public. On the other hand, based on the Islamic ethics, the good conduct or ethics can be translated as *amanah*. The beauty of Islam is that, the teaching commands all the *muslims* to be *amanah* at all times; disregard of place, time, situation or condition. Importantly, the good manner must be evidenced in all aspects of ones' life. The command is *wajib* and fails to adhere is sinful. So, this shows the degree of value that Islam has imposed on the believers. Anyway, professionalism is somewhat like an obligation that again, all the *muslim*s have to abide. These are the *adab* that includes honesty, integrity, responsibility and many more.

Coming back to the review, there were certain elements thought to be unethical and unprofessional practices found to influence the unsuccessful of the project. They are identified as: i. not knowing to construct a specific landscape work ii. not showing full commitment or responsible when not abiding to schedule of works iii. not being able to provide the necessary expertise, knowledge or skill in responding to job scopes. Another unprofessional conduct that can be considered for the reviewing purpose was the issue of conflict of interest. Perhaps, this

can be explained as not being able to practice the necessary transparency. All these reflect the issues of morality that has concerned for right behaviour and how a member in the construction should conduct oneself (Jamilah, 2008).So, these were among the grey examples presented under the issue of professionalism and ethics that were thought having negative impacts on the results of the project.

Statement of Needs (SNs)

SNs refer to client's needs as normally state in writing It is an important document or the so called project brief with several information to be adhered by designer. It guides a designer to establish preliminary design ideas. Coming back to the project, the intents were not clear since at the proposal stage. Occasionally, there were some changes of job scopes made without clear written instructions. The situations caused difficulty to several construction teams. Though stakeholder might have good reasons for that, still the action would put the project into risks. One of the risks was due to Variation of Order (VO); one of the implications was that, it would incur the project cost.

Perhaps, this was among the reasons, why the cost of the project delivered did not match to the earlier cost estimated. The cost of the delivered project had become double. In conclusion, the indefinite or unclear SNs observed to affect both quality and cost of the project, while the following statements justify the authors' view. Again, due to additional work or change of job scope, more manpower was needed to meet the project's dateline. Second, the situation had potential to sacrifice the quality of the works delivered, when urgency became top priority. So, these were among the issues under the SNs, thought to influence the results of the project.

DISCUSSION AND CONCLUSION

Discussion on the issues of the landscape project as stated in the '**REVIEW OF POTENTIAL ISSUES CONTRIBUTING TO PROJECT'S FAILURE'**is the typical situation experienced in any construction. This paper reviews these issues (e.g. CMs, SNs and professionalism and ethics) and views them to correlate to the unsuccessful of the project. In the review, the authors state that lack of CMs had implicated the coordination among the teams and the direction of the construction. When the situation continued, the potential of making wrong decisions on site would be very high. In this case, perhaps, several scheduled meetings could have been arranged with little effort from the relevant authorities. This was the crucial aspect, where most architectural constructions have never fails to adhere to.It is observed that lack of coordination meetings was due to poor conducts (e.g. lack of commitment and responsibility) of few construction teams.

The review further discusses on the unclear project brief, which was directed to the SNs. The contents should have been clearly written out and finalised, so that, everybody involved in the construction had clear vision and direction. Importantly, the potential of having VOs through indefinite SNs was high and this should be avoided for better financial management. Perhaps, the relevant construction team or individual could have explainedon the implications or consequences of not having a focused project brief. In many cases, client was not aware about that and the matter should be clarified before the construction took place.

Finally, the review talks about professionalism and ethics, which was thought to be the most sensitive of all the issues presented. When dealing with a public's work, perhaps, good attitude, behaviour, or moral conduct would be the major attributes needed in achieving a zero – defect project. Here, the complaints received are evidenced on the landscape and on paper; e.g. account statement. This explains the quality of work delivered was not parallel to the value of money spent. Through good professionalism practices, the public should be able to use, benefit and enjoy thelandscapewith the right money value. Similarly, ethics was another behavioural issue that had significant impact on the quality of the project. For instance, conflict of interest could have been avoided if all members were able to practise transparency. Meaning that, all the decisions made regarding the project should be disclosed to all of the construction teams.Again, the situation is considered unethical and not permitted.

Because of the aforementioned in the review, it is worthwhile to consider the authors' experiences as lessons to be considered in the future construction with urgent needs. Importantly, they are issues not to be repeated and become exemplar for better CPs. In conclusion, the insights provided have implications to several individuals and organisations; e.g. stakeholders, academicians and students in the built environment discipline, Superintendent Officer (SO), consultants, supervisor, contractors, vendors, contract workers and many more.

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TOWARDS A COMPREHENSIVE VISION FOR EVALUATION OF COURTYARDS' FUNCTION : A CASESTUDY OF THE COLLEGE OF ARCHITECTURE AND PLANNING AT KING SAUD UNIVERSITY

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ABSTRACT

The main aim of this research is to evaluate the function performance of existing courtyards in an educational building. The College of Architecture and Planning at King Saud University, was chosen as a casestudy for this research. The study relied primarily on practical work to provide analytical information and data by questionnaire distributed to different segments of users including employees and students. The answers of the participants in the questionnaire were sorted and then analyzed by the Microsoft Excel program. Results of the study showed that the existing courtyards have very low level of utilization and are not comfortable space for sitting. There is a weakness in the thermal performance with poor natural ventilation. As a result the existing courtyards were not utilized. The investigation and results of this research reveal recommendations to improve the function of courtyards in the casestudy and in all other buildings that are located in hot and arid regions.

Keywords: courtyards, thermal performance, educational buildings, survey questionnaire, environmental design.

INTRODUCTION

Courtyard is one of the important Islamic architectural vocabulary that have been used in building to enhance the performance of buildings (AlTamimi, 2008). Saudi Arabia is a fast growing country with the implementation of a large number of construction and development projects due to the rapid economic improvement after the large-scale production of oil in the early 1960s (Al-Hemaidi, 2001). About 65 per cent of the electric energy generated in Saudi Arabia is consumed by operating buildings and 70 per cent of this energy is used by air conditioning (Said, et al. 2003).

Al-Naaim,(2003) states that educational buildings in Saudi Arabia include colleges are one of the major electrical energy consumers during the peak time of the day. A significant amount of energy could be saved if enough attention was given to passive design principles in the early stages of the design processes. Environmental passive design can reduce energy consumption by utilizing renewable energy resources to cool, heat and light the interior spaces of a building while providing a healthy, high-quality and comfortable learning and teaching environment for students and teachers (CIBSE, 1998,). Courtyard is one of the most important passive design strategies that could modify the microclimate and improve the indoor environment if it is well designed (Abanomi 2005). The College of Architecture and Planning at

King Saud University was chosen as a casestudy for this research. It is a contemporary building that was built in 2007.

This research attempts to highlight users' opinion about the courtyards' function of the casestudy. It is anticipated that the findings of this research will highlight the importance of passive design principles and strategies in existing and future college buildings in the Riyadh region and in other cities that located in hot air regions.

PROBLEM STATEMENT AND SIGNIFICANCE

Courtyard is an important architectural element not only in educational building, but also in all built environment. A building with a courtyards is a type of building form that has been used massively in educational buildings in Saudi Arabia. Nevertheless, most of the existing courtyards lack necessary items that could improve the microclimate of the courtyards, such as applicable landscape elements and shading devices include trellis with movable canvas. These items should be used to reduce the amount of direct and reflected solar radiation received by surrounded walls and floor. Also, there are lack of using evaporative cooling system such as sprinklers and/or cool towers. As a result, most of the existing courtyards educational buildings in Saudi Arabia are not utilized. Care and attention unfortunately is not given during early stages of buildings' design to enhance their function. This research will highlight the design shortage of existing courtyards in an educational building in order to improve the function of courtyards in future buildings' design.

AIM AND OBJECTIVES OF THE RESEARCH

The aim of this research is to evaluate the courtyards' function in an existing educational building. With the purpose of achieving the main aim of this research, a number of objectives were derived. The main objectives of this research are as follows:

1- To investigate, through a literature review, the importance of courtyards' function in the built environment in general and in an arid region in particular.
2- To conduct questionnaire and site observations to evaluate the function of the existing courtyards in the casestudy.
3- To identify, through a literature review, passive design strategies that could improve the function of courtyards in a hot and dry climate.

Courtyards' function

A courtyard has been used in the built environment to enhance the function of buildings. It is one the main passive design strategies that could modify the indoor environment. A courtyard can maximizes daylighting and cross-ventilation and provides interior spaces with additional orientation. Openings of each surrounded space can be oriented to the courtyard as well as the outdoor.

Mohsen (1979), states that the courtyard has been used in buildings in the cities of the Middle East long time ago, and play a major role in improving the internal environment of the building where the courtyard is taking advantage of the remarkable difference between air temperature during night and day. Courtyard can coop with desert climate, where Riyadh city is

located, when air temperature significantly drops during night. The sky is clear which help heat that was absorbed during the day to escape back to the sky during night.

Design characteristics of courtyards have been developed in the built environment over the different historical eras, from the era of ancient Egyptian architecture to the modern era (Nobi, 2003). Nobi, also summarizes the main design principles of courtyards in three categories;
1- Design principles related to the function of the building include:

A- achieving privacy.

B- The relationship between the courtyard and surrounded spaces.

C- functional flexibility.

2- Design principles related to the building form and volume include:

A- courtyard form

B- Floor area and height of the building.

C- external elements and surfaces finishing

3- Design principles related to the location.

A- Building's orientation.

B- The relationship among the indoor spaces and the courtyards.

Courtyards are also considered as a gathering place where people can meet and spend good time in a semi outdoor place. Courtyards are useful spaces in all buildings if they are well designed as stated by Auckland (2008). Designers should provide comfortable sitting areas in courtyards to encourage people to use the space. Shading devices such as trees and shrubs are also needed to enhance the thermal performance and the quality of the spaces and reduce the absorbed temperature. Muhaisen (2006), states that the thermal performance of a courtyard based on the amount of solar radiation received by walls and floor. According to Aldawoud (2008), a courtyard with natural and artificial shading elements is a successful cooling strategy especially in hot arid regions, because it can increase evaporative cooling which help to reduce surfaces' temperature and therefore reduce indoor air temperature.

In addition, courtyard as an architectural concept is important in all type of buildings especially in educational buildings. Safarzadeh and Bahadori (2005), state that courtyards in educational buildings are important sources of daylight for indoor spaces such as classrooms and employees' offices. Courtyards as semi outdoor spaces are needed to have vision connection between classrooms and outdoor environment. Also, they can be used as multi-use space for daily or annually school activities. However, environmental passive design approach of educational buildings was given little or no attention in Saudi Arabia because most of the buildings relied on mechanical systems to cool indoor spaces (Abanomi, 2005). This research will illustrate design recommendations that could enhance the courtyards' function.

RESEARCH METHODOLOGY

The study based primarily on practical work to provide analytical information and data collected through designed questionnaire, which was distributed to different segments of users including employees and students. Questionnaires were developed to evaluate the courtyards' function in the casestudy. There were 367 questionnaires distributed to the population mentioned above, and

219 was received with full information needed for this research. The answers of the participants in the questionnaire were sorted and then analyzed by the Microsoft Excel program.

Table (1) illustrates the number of distributed and received questionnaires.

Table 1: *Number of Distributed and received questionnaires*

Population	Number of distributed questionnaires	Number of questionnaires received with full information needed	Percentage %
Employees	117	69	59
Students	250	150	60
Total	367	219	60

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Yin (1994) believes that "By making a field visit to the casestudy "site," you are creating the opportunity for direct observation. The casestudy selected for this research is the College of Architecture and Planning at King Saud University. The casestudy was chosen for two main reasons; first reason was the accessibility to the building; second reason was that the building's design concept represent most of the higher educational buildings in Saudi Arabia. It is a three-story building with six courtyards as shown in the figure Number (1). Courtyards A and B are surrounded by all floors and their dimensions are 18m width by 18m long by 14m height. The courtyards C, D, E, F are surrounded by second floor only and their dimensions are 9m width by 9m long by 6m height. The building is built by reinforced concrete, painted by light brown color (beige), and used porcelain tiles for the floor finishing. All courtyards do not have shading elements as shown in the following figures. Figure (2) and Figure (3) illuminate the courtyards Number E and B.
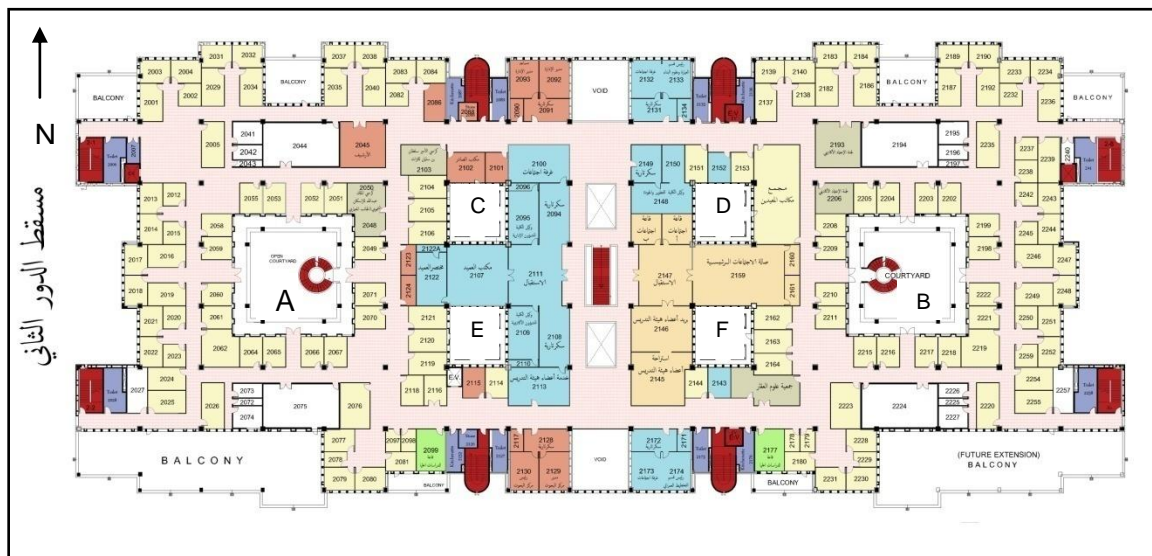

Figure (1): *typical floor of the college of Architecture and Planning (the case study). Source, the college of Architecture, 2013).*
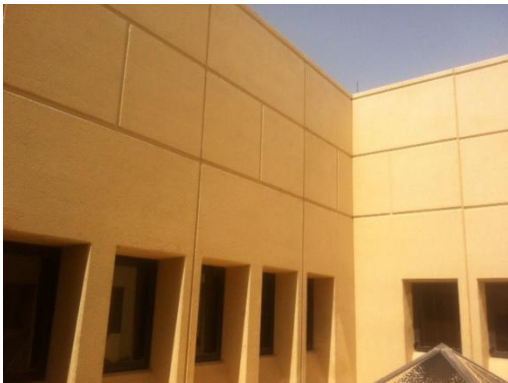
Figure (2): *courtyard No.(E). (Source: by Author).*

Figure (3): *The courtyard No. (B) at the second level. (source by Author).*

DISCUSSION OF RESULTS

Data analysis shows that courtyards in the casestudy have very low level of utilization and are not comfortable space for sitting. Even though results show that courtyards provide very good level of daylighting, the thermal performance of courtyards is very poor as users stated. There is a lack of shading element either natural like trees and shrubs or artificial like tents and pergolas. All courtyards are totally exposed to the direct solar radiation and the air temperature is very high and dry.

In addition, it was found that natural ventilation cannot be utilized inside the building due to the air temperature inside the courtyards. The lack of the evaporative cooling inside the courtyards increase the air temperature. The absence of comfortable sitting area and shading devices and evaporative cooling is affecting the thermal performance of the courtyards.

Even though users stated that Finishing material that used in the floor and surrounded walls were in a good shape, they are not proper for the local climate. Walls built by concrete block with beige color that exposed to the direct and reflected solar radiation. They absorb heat during the day and reradiate it back into the space during night. Porcelain tiles were also used in the floor area, wall to wall, of the courtyards. These type of materials used in the surrounded walls and floor increases air temperature because they absorbs and reflect heat (Abanomi, 2005). Overall, Courtyards in the casestudy need more design modification to overcome all the remarks mention and discussed above. Table (2) summarizes all the received answers of the population.

<p align="center">**Table 2**</p>

1- Users' evaluation of the environment inside the courtyards:			
1-1 Daylighting:			
Question	Employees	Students	Average
The level of natural lighting inside the courtyards and surrounding places	Very Good	Excellent	Very Good
Level of direct light from the sun into courtyards and surrounded places	Good	Very Good	Very Good
The effectiveness of internal courtyards design to block the glare	Fair	Good	Good

The level of satisfaction with daylighting	Very Good	Very Good	Very Good
1-2 Noise level:			
Level of blocking noise from outside by courtyards	Good	Very good	Good
Level of noise inside Employee's offices	Good	Good	Good
Level of noise inside classrooms	Good	Very good	Good
1-3 Thermal performance			
Air temperature in the courtyards during summer compared with outdoor air temperature	Fair	Good	Good
Air temperature in the courtyards during winter compared with outdoor air temperature	Fair	Good	Good
Air temperature in courtyards compared to indoor spaces	Fair	Fair	Fair
Natural shading elements such as trees	Poor	Poor	Poor
1-4 Natural ventilation	**Employees**	**Students**	**Average**
Courtyards role to provide classrooms and offices with natural ventilation	Poor	Poor	Poor
Satisfaction level with natural ventilation in courtyards	Fair	Fair	Fair
2- Users' point of view about the utilization of the courtyards			
Question	**Employees**	**Students**	**Average**
Utilizing courtyards for multi activities	Poor	Poor	Poor
Intermittently utilization of courtyards	Fair	Fair	Fair
Continuously utilization of courtyards	Fair	Poor	Poor
Comfortable sitting area	Poor	Poor	Poor
Level of comfortable Vision	Fair	Poor	Poor
Effectiveness of courtyards in users' productivities	Fair	Poor	Fair
Finishing materials used in the courtyards	Good	Fair	Good

RECOMMENDATIONS

The previous results and discussion emphasize the importance of environmental passive design strategies for courtyards. Based on the investigation of the collected data and results, this section summarizes the main design recommendations that could improve the existing courtyards' function and could improve courtyards' design in all buildings in hot and arid regions. The main recommendations are:

1- Existing Courtyards should be shaded by vegetation and artificial elements such as tents and pergolas. Surrounded walled can be cover by creepers to minimize the amount of the direct solar radiation and therefore minimizing the received heat.
2- Evaporative cooling is an effective design strategy that could be used in the existing courtyards. Cool towers can modify the microclimate of the courtyards and therefore cool up the indoor spaces.
3- Using proper finishing materials and light color will help to improve the thermal performance of courtyards. For example, stone tiles that place directly on the soil with some gapes among them are recommended to reduce the absorbed heat and reduce the

reflected solar radiation. Avoiding placing wall to wall tiles on the floor will also help to reduce the amount of heat absorbed by floor tiles.

4- Existing courtyards should have comfortable benches that should be installed in convenient, shaded and clean sitting areas for users to utilize the spaces.

ACKNOWLEDGEMENTS

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International Conference on Architecture and Built Environment 2013 (ICABE2013)
International Islamic University Malaysia, Kuala Lumpur
7th – 8th November, 2013

STRATEGIES TO ENHANCE QUALITY DATA INPUT REQUIREMENTS OF LIFE CYCLE COST (LCC)

Mohd Fairullazi Ayob [1] and Khairuddin Abdul Rashid [2]

ABSTRACT

Commentators pointed out that one of the major hurdles of implementing LCC analysis in the Malaysian construction industry is lack of current and reliable data. In addition, most of LCC researchers and estimators in the Malaysian construction industry considerably focused on the LCC conversion process but very little emphasis is given on the availability, accessibility, currency and reliability of data as inputs into the process of producing reliable LCC outputs. This paper reports part of a three-year programme of research to enhance quality of LCC outputs through the enhancement of quality data input requirements. The objective of this paper is to present on the development, evaluation and validation of the most appropriate strategies to improve the availability, accessibility, currency and reliability of data as inputs into the process of producing reliable LCC analysis in the Malaysian construction industry. Looking at the results of the most appropriate strategies which have been prioritized, there is an overwhelming requirementfor a clear procedure or comprehensive guideline to be prepared on the acquisition of cost data inputs to enhance quality data input requirements of LCC. This clear procedure can be best translated in the form of model, framework or protocol to be developed so thata step by step methodological approach can be exacted to make the data available, accessible, current and reliable in facilitating the clients, estimators and researchers to better calculate LCC leading to better outputs.

Keywords: LCC, data, quality, requirements, strategies

INTRODUCTION

Life Cycle Cost (LCC) is an economic assessment technique that uses mathematical method to estimate total ownership costs of a building or components within that building over an anticipated life(Davis Langdon, 2010; BS ISO 15686-5, 2008; ASTM International, 2010).Local researchers and commentators like Khairuddin (2009, 2010a), Mohd. Mazlan (2002, 2010), Ahmad Zamri (2010), Nik Nasir (2010), Mariyam (2010), Azlan Shah et al. (2010), Masoud (2009), Masoud et al. (2010), Siti Hamisah (2001a, 2001b, 2005, 2007a), Kamarul Anuar (2009, 2011), and Muhammad Zuhry (2007, 2010) suggested that LCCis suitable to be employed as a tactical tool in assessing alternatives considered in the line of the Government objectives, to advise and facilitate the Government in planning and managing the newer approaches and techniques of project delivery system, which include the Public Private Partnership (PPP), Value Management (VM), facilities management (FM), sustainable building and Industrialized Building Systems (IBS), and the Red Book procurement system of the GLC. Besides that, the Construction Industry Development Board (CIDB) and the Building Industry President Council (BIPC) have strongly recommended in the Construction Industry Master Plan 2006-2015 (CIMP) that the clients' organization and building owners in the Malaysian construction industry should adopt LCC in the investment decision making process in effort to achieve the best value for money (CIDB, 2007; Muhammad Zuhry, 2010). Moreover, under the Tenth Malaysia Plan (2011-2015), the Government has proposed LCC as an economic assessment tool incorporated with the asset and facility management (AFM) practiceto maintain and preserve the asset in a

cost-effective and holistic manner (Puva et al., 2010; NAFAM 2007; Utusan Malaysia Online, 2009; Shaziman, 2009b; Muhammad Zuhry, 2010).The Public Private Partnership Unit of Prime Minister's Department (3PU) also hasmandated LCC as a technical instrument and cost effective tool for PPP projects in the Public Private Partnership Standard Guideline, 2009, to facilitate 3PU to ascertain the most optimum total cost of asset throughout the life span (3PU, 2009a: 6; 2009b: 5).The LCC process can be categorized into three main phases, i.e. data inputs, conversion and outputs (BS ISO 15686-5, 2008; Rist, 2011; Kelly and Hunter, 2009; NATO Research and Technology Organisation, 2009). The availability, accessibility, currency and reliability of cost data used as inputs in LCC analysisis of paramount importance that should be emphasized in the estimation to produce reliable LCC outputs. However, several scholars and researchers pointed out that one of the major hurdles of implementing LCC practice in the Malaysian construction industry is lack of reliable, accurate, and current cost data inputs(Masoud, 2009; Masoud et al., 2010; Siti Hamisah et al., 2007a).The findings of the research on the problems related to inadequacies in data input of LCC in the Malaysian construction industry havebeen reported elsewhere (Mohd Fairullazi and Khairuddin, 2011c, 2012).Hence, there is a crucial need of developing appropriate strategies to overcome the problems related to inadequacies in data inputs of LCC in the Malaysian construction industry.

REVIEWON STRATEGY TO IMPROVE QUALITY OF DATA INPUTS IN LCC

A study carried out by Davis Langdon (2010) has identified that many projects in Europe have encountered problems with regard to the absence of current and reliable data for the practice of LCC analysis. The study identified that many LCC estimators in the projects preferred to use alternative methods that are not part of the risk management techniques, i.e. conducting interviews with different property owners, and observing opinions and judgements from the LCC experts, and suppliers and specialists in construction industry (Davis Langdon, 2010: 68). The significant reason that influenced the LCC estimators to use these alternative methods is the absence of data required as inputs for risk management analysis, i.e. sensitivity analysis (Davis Langdon, 2010; NATO Research and Technology Organisation, 2007; Goh et al., 2010).Hence, it is not incorrect to state that the alternative methods that are not part of the risk management techniques, i.e. interviews and group discussion with different property owners, clients, LCC experts, suppliers, specialists and LCC researchers are more appropriate to improve the quality data input requirements of LCC.

In Malaysia, the Public Works Department (PWD)is currently in the process ofdeveloping a standard guideline of LCC called *Garis Panduan Pengiraan Kitaran Hayat (KKH)* [Standard Guideline of Estimating Life Cycle Cost (LCC)](Zulkifly Yaacob amd Elizuan, personal communication, November 18, 2011). This guideline is developed to provide appropriate methodology for the practice of LCC analysis in the future public projects in the Malaysian construction industry. It provides cost breakdown structure (CBS) standards, LCC models, methodologies and other key features of LCC for the public building and civil infrastructure projects in the Malaysian construction industry (PWD, 2011c). In addition, it provides three categories of public buildings and facilities according to the degree of importance to attain most optimum LCC and the best value for money. The guideline is prepared in a

national language.However, it wasfound from the review ofthe standard that it is incomplete of methodology to acquire current and reliable data and no strategiesprovided on howto improve the quality data input requirements of LCC. Based on these findings, it is not misconception to state that the guideline of LCC drafted by PWD is still remained ineffective and hence a researchshould be carried out to develop and propose strategies to improve the quality data input requirements of LCC.

QUALITY DATA INPUT REQUIREMENTS OF LCC

The scope of cost for LCC analysis of a building is within the boundary of the total cost of the building (Davis Langdon, 2010; BS ISO 15686-5, 2008; Kelly and Hunter, 2009). Table 1provides in summary the types of cost data for each category of cost components of LCC of a building. In calculating LCC of the building, the estimators need to break down the building costs in detail and record the cost breakdown structure (CBS) of various levels of data (i.e. strategic, system or detailed levels) into a spread sheet (BSI, 2008; BS ISO 15686-5, 2008). The literature study has identified the following as the keyquality of data input requirements required to calculate LCC betterfor producing reliable outputs:

i *Availability* of cost data is defined as data certainty (Gross and AEA, 2008; NATO Research and Technology Organisation, 2009; BS ISO 15686-5, 2008; BSI, 2008; Goh et al., 2010; Davis Langdon Management Consulting, 2007a). The level of data certainty is low when the level of data uncertainty is high, hence, many assumptions have to be made by using risk management techniques, in which the selection of risk management technique depended not only on the availability of cost data, but also the project size, the purpose of the selection, and function of the selection technique (BSI, 2008; Flanagan et al., 2005).

ii *Accessibility* of cost data is defined as the ease of access to obtain cost data from data sources or suppliers within known background (NATO Research and Technology Organisation, 2009; http://oxforddictionaries.com/, retrieved Mac 3, 2013). There are two types of cost data for LCC study, i.e. external data and internal data (NATO Research and Technology Organisation, 2009). External data iscost data that prepared by specialist manufacturers, suppliers, contractors, historical data, modelling techniques, etc. that normally can be accessed through published sources and online sources (Ren and Zhang, 2007; Schade, 2007; BSI, 2008). Some external data may require the data users to subscribe cost data from the subscriber-base information services (CRES and Kikira, 2009; BSI, 2008; www.statistics.gov.my). Indeed, in some cases the consultants that search cost data to estimate building future costs may have to engage on a project for client in order to have access to the operation and maintenance cost records (Flanagan and Jewell, 2005). Besides, some cost data from the manufacturers may have to be treated with caution purposely to keep originality of the data (BSI, 2008). Whereas, internal data is categorized as primary cost data which documented and recorded by the organizations or firms but the data is confined with the organizations in the library

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(Davis Langdon, 2010; NATO Research and Technology Organisation, 2009; Khairani, 2009; CRES and Kikira, 2009).

iii *Currency* of cost data is defined as recent cost data that can be used as inputs for LCC analysis (http://oxforddictionaries.com/, retrieved Mac 2, 2013). Some cost data are current as they are updated on a yearly basis; and some cost data can becategorized as very current as they are frequently updated on a quarterly or monthly basis (www.statistics.gov.my; Khairani, 2009; DSM, 2010; www.cidb.gov.my).

iv *Reliability*of cost data is defined as data consistency, which implies how comparable the cost data to the actual value arrived from similar and repetitive methods under the same research condition (Creswell and Clark, 2007; King, 2007; Giannarakis et al., 2011). The term 'reliability' is chosen for the research rather than 'accuracy' as it denotes some levels of confidence placed on the future cost of LCC analysis (Flanagan and Jewell, 2005). The reliability of cost data can also be defined as accuracy of data, which indicates that the data is structurally formed in detail, completeness, adequate, and compatible to be used as inputs into the process of producing reliable LCC outputs (CRES and Kikira, 2009).

AIM OF THE RESEARCH
The three-year programme of research iscarried out to purposely enhance the quality of LCC outputs through the enhancement of quality data input requirements.

OBJECTIVE AND MOTIVE OF THE PAPER
The objective of this paper is to report on the development, evaluation and validation of the most appropriate strategies to improve the quality data input requirements of LCC analysis in the Malaysian construction industry. This paper is prepared to support dissertation for Doctorate programme undertaken by the first author.This paper follows the other four papers that have been presented elsewhere (Mohd Fairullazi and Khairuddin, 2011a[1], 2011b[2], 2011c[3], 2012[4]).

METHODOLOGY DESIGNED FOR THE RESEARCH
There are three types of research strategies, namely qualitative, quantitative and mixed methods research (Naoum, 2007; Fellows and Liu, 2008; Creswell and Clark, 2007). The qualitative research was chosenas it is more appropriate strategy than the quantitative and mixed method researches because the data of LCC in the Malaysian construction industry are relatively limited, not current and inaccessible. In addition, the nature of research in LCC is subjective and the data is often rich thatrequires the researchers to examine the data inputs and data behaviours based on the opinions, ideas, views and perceptions from the experts that have knowledge, skills and expertise in LCC (Mohd Fairullazi and Khairuddin, 2011a, 2011b, 2011c, 2012).

A modified Delphi was chosen as a fieldwork approachin the research as it is more appropriate than other typical approaches (e.g. surveys, case studies, action research) as the nature of the research is lackedof current and reliable data, insufficient theory, and limited number of respondents to provide a sufficient response rate (Wiersma and Jurs, 2009; Hauck et al., 2007 as cited in Giannarakis et al., 2011; Goh et al., 2010).A three-round questionnaire process was carried outin modified Delphi to move the panellists toward the consensus of opinion. Figure 1 illustrates graphically an overall schematic flow of the modified Delphi process. The explanation about the methodology designed for the research to collect primary data has been reported elsewhere (Mohd Fairullazi and Khairuddin, 2011b, 2011c, 2012). The modified Delphi approach was carried out to achieve two objectives, with a group of experts that have knowledge, skills and expertise in LCC. However, the focus of this paper is only to report the study on the second objective, which is to identify and generate consensus of expert opinion regarding the appropriate strategies to improve the availability, accessibility, currency and reliability of data as inputs for producing current and reliable LCC analysis in the Malaysian construction industry. This is because the study on the first objective, i.e. to identify and generate consensus regarding the state of data availability, accessibility, currency and reliability in the Malaysian construction industry as inputs for producing LCC analysis has been reported elsewhere (Mohd Fairullazi and Khairuddin, 2012).

All responses obtained from the first round modified Delphiquestionnairewere coded successively into questions for the second round questionnaire. The first item response was coded as 10, and the subsequent item responses were coded in increasing number of 10 (i.e. 10, 20, 30, 40, 50, 60, etc.). The 'cut-off' mean of 3.75 on the 5-point Likert scale or 75% of all individual ratings at the 3.75 level or higher is used to identify very important item responses that were included in the answer set of the respective questions. The item response that obtained mean scores lower than the 'cut off level' (3.75) is considered unimportant and was excluded from the answer set of the respective questions (Franklin and Hart, 2006; Bulger et al., 2007 as cited in Sandrey and Bulger, 2008).However, if the results of the third round show there is a large number of item responses obtained mean scores more than 3.75, only three item responses that obtained the highest mean score within the category of more than 3.75 would be given top priority for recommendation.

This modified Delphi study is limited by constraint in completing the primary data collection within a specified time as the three-round process was time consuming and lengthy. In addition, it was beyond the control of the researcher if the panellists were unable to complete the questionnaires within the time limit although many reminders have been sent out to the non-responders using SMS, emails and phone calls. Furthermore, it was difficult to convince all the panellists to continuously participate and completed the questionnaires in the second and third rounds of modified Delphi study.

DATA ANALYSES AND DISCUSSION OF RESULTS

In the first round of modified Delphi study,42 experts were invited to participate and all of them completed the questionnaire(100% response rate). All 42 panellists who participated in the first round questionnaire were coded successively (i.e. from 1 to 42) for the second and third round questionnaires. In the second round, the invitations were sent out to the panellists who

participated in the first round.22 panellists completed the second round questionnaire, and the response rate of 52.4% is acceptable to produce results for the subsequent round of the study (on the basis of first round participated respondents). In the third round, 20 panellists participated and completed the questionnaire and the response rate of 90.9% is considered adequate to report the results of the study (on the basis of second round participated respondents) (Gordon, 2003; Immawalle, 2007; Barry et al., 2008).

There are total 6 questions in the questionnaire that require the panellists to provide suggestions of appropriate strategies can be done to make the data more available, accessible, current and reliable for LCC analysis. Looking at the results of the third round questionnaire, there are relatively high numbers of strategies scored high levels of mean and low levels of SD. However, because of the relatively high numbers of strategies that achieved high levels of mean and low levels of SD, the focus given only to the strategies that obtained the highest mean score. Hence, only strategies that received the highest mean within that category of more than 3.75 would be given top priority for implementation. In such a case, all the strategies that were grouped in accordance to the mean and SD, the top three strategies having the highest mean scores within that category of more than 3.75 were considered top priority for implementation.

All top three strategies that having the highest mean scores within that category of more than 3.75 were consolidated as shown in Table 2. Majority of the panellists have the same opinion that the establishment of National Cost Centre and Building Cost Information Service (BCIS) is significant to provide current and reliable cost data inputs in purposely to improve the practice of LCC analysis in the Malaysian construction industry. The majority of the panelists also reached consensus that the Government and related agencies (i.e. Economic Planning Unit (EPU), Construction Industry Development Board (CIDB), Public Works Department (PWD), Royal Institution of Surveyors Malaysia (RISM) and Institution of Engineers Malaysia (IEM), Master Builders Association Malaysia (MBAM), Guild of Bumiputera Contractors, Bank Negara and Financial Institutions) should take more initiatives to establish standard way and guidelines to compile, record and monitor data to make the data more current and reliable for LCC analysis. Looking at the top three strategies which have been prioritized in Table 2, it was found that majority of the strategies can be categorized as policy and tactical strategies that require significant involvement of the Government and related agencies to play their roles in improving the availability, accessibility, currency and reliability of data as inputs into the process of producing reliable LCC outputs. It is learned from these top priority strategies (i.e. 49 out of 59 top strategies), there is an overwhelming requirement for a clear procedure or comprehensive guideline to be prepared by the Government and related agencies on the acquisition of cost data inputs to enhance quality data input requirements of LCC. The requirement for clear procedure on the acquisition of cost data inputs is best translated in a form of model, framework or protocol to provide step by step methodological approach on how to make the data available, accessible, current and reliable as inputs for LCC analysis.

CONCLUSIONS AND RECOMMENDATIONS

This paper presents the modified Delphi as chosen fieldwork approach to establish consensuses of expert opinions regarding the most appropriate strategies that could be proposed to improve the availability, accessibility, currency and reliability of data as inputs for producing reliable LCC outputs in the Malaysian construction industry. The results of the modified Delphi study show that there are relatively high numbers of strategies having the highest potential to be implemented and least constrained, with the potential of a high achievement in improving the availability, accessibility, currency and reliability of data as inputs for LCC analysis. Because of the relatively high numbers of strategies having high levels of mean and low levels of SD, the strategies that received the highest level of mean within that category of more than 3.75 were given top priority for recommendation. Looking at all thetop three strategies which have been prioritized in Table 2, there is an overwhelming requirement for a clear and appropriate procedure to be prepared on the acquisition of cost data inputs to enhance quality data input requirements of LCC. The results show that49 out of 59top strategies that have been prioritized in Table 2have significant connection to LCC data inputs, which can be combined and developed either in the form of model, framework or protocol to provide step by step methodological approach on how to make the data available, accessible, current and reliable as inputs into the process of producing reliable LCC outputs in the Malaysian construction industry.

The research is on-going and hence the development of a clear procedure or comprehensive guideline on the acquisition of cost data inputs in LCC analysis should become the second part of the research. Because of the complexity of the domain research, the authors suggest the procedures to be developed, evaluated, validated and tested with a group of experts that have expertise, skills and knowledge in LCC using a Focus Discussion Group (FGD) approach. The priority for membership to the FGD is suggested to be given to the panellists who completed all the three rounds of modified Delphi questionnaires. However, the panellists who did not complete all the three rounds of modified Delphi questionnaires but reside not far from the research place (i.e. Klang Valley)can be invited to participate in the FGD for greater diversity in relation to the study of LCC data inputs.

ACKNOWLEDGEMENT

NOTES

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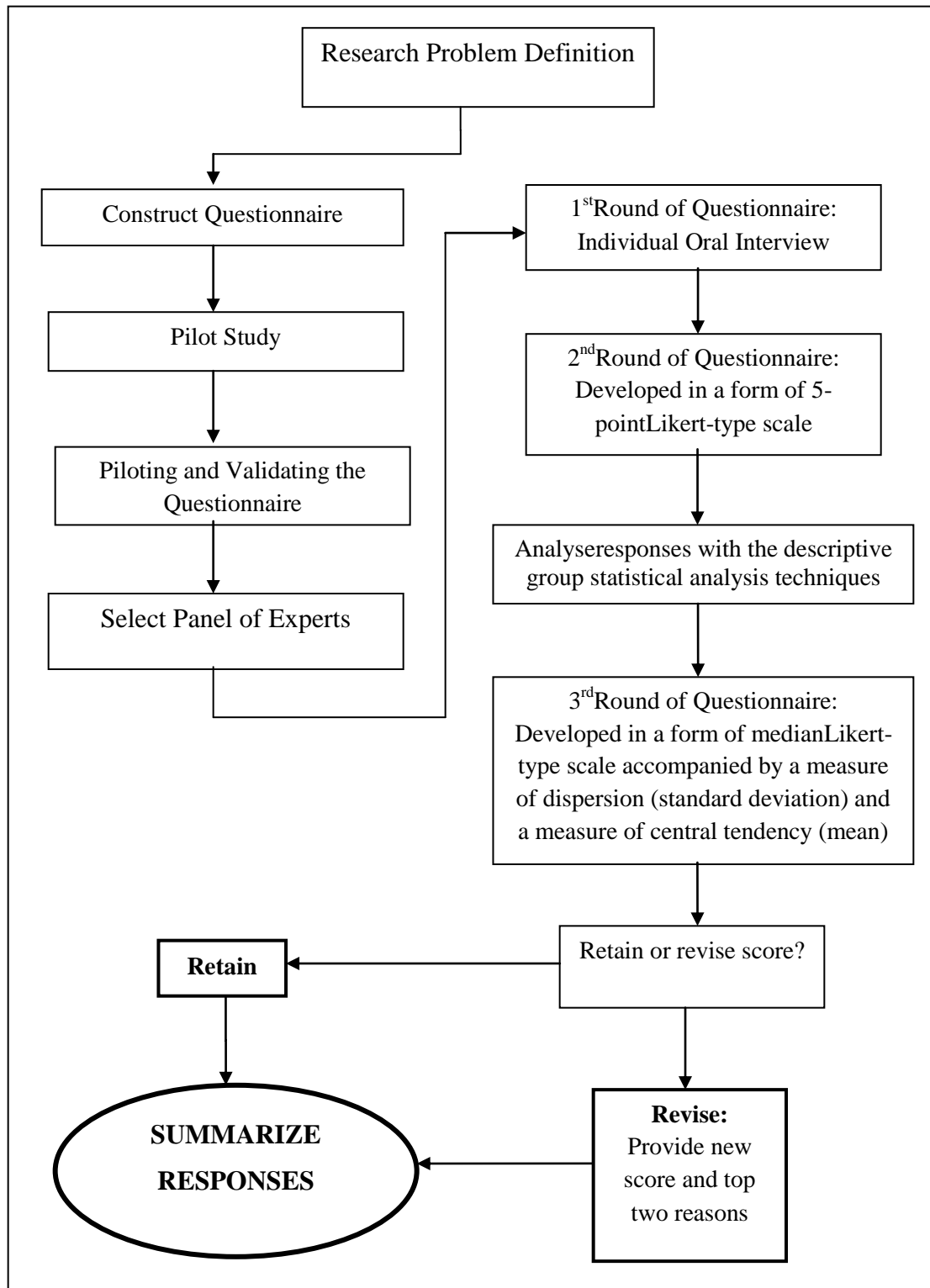
APPENDIX

Table 1: Cost components and types of cost data of LCC of a building

Cost component (Cost unit)	Cost data
Initial capital costs	Land acquisition cost, construction work costs (i.e. substructure, superstructure, finishes, fittings, services installation, external works, preliminaries, contingency including risk allowances, and contractor's design fees,), other construction related costs (i.e. professional services fees, marketing costs, decanting, infrastructure charges, infrastructure adoption and maintenance cost, highway cost, utility charges, licenses and permits, planning application and building regulation fees, party wall cost, rights to light cost, client's design development, financing cost, insurance, contingency including risk allowances), and client definable costs (e.g. cost incur to make value added on the building), landscaping cost
Operation costs	Utilities costs, insurance, service costs, administration costs, security costs, cleaning costs, local and statutory charges in connection with the building operation
Maintenance and replacement costs	The costs of regular custodial care and repair, annual maintenance contracts, maintenance management, adaptation or refurbishment, redecoration, and salaries of facility staff performing maintenance tasks, repairs and replacement of minor components
Financial costs	Discount rates, inflation rates, interest rates and taxes
Salvage costs	The cost, or gain, of getting the rid of assets after use at the end of study life (residual value, demolition cost, transferring cost, disposal inspection cost).

(BS ISO 15686-5, 2008; BSI, 2008; Davis Langdon, 2010; Fuller, 2009; Kelly et al., 2009; Kirk and Dell'Isola, 1995)

Figure 1: The schematic flow of modified Delphi process

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ISLAMIZATION OF KNOWLEDGE IN QUANTITY SURVEYING: ACASE STUDY OF KULLIYYAH ARCHITECTURE AND ENVIRONMENTAL DESIGN, IIUM

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ABSTRACT

Islamisation of knowledge (IOK*)* is important in producing graduates who are able to apply Islamic principles in their working life. As an Islamic university, IIUM places a high emphasis on the Islamisation of knowledge including *shariah* compliant curricula. IIUM's implementation of Islamisation is still evolving. At the Kulliyyah of Architecture and Environmental Design (KAED), Islamisation of knowledge is emphasised in all academic programmes including Quantity Surveying. Despite the effort, its implementation has hardly been studied. Therefore this study was conducted to know the perceptions of QS lecturers and students on the implementation of curriculum. This study used both qualitative and quantitative approaches. The interview questions were developed by the researchers and the survey instrument was developed from a previous study. Data collection was done using interviews of lecturers (N=7) and survey of students (N=66). The findings show that the existing QS curriculum satisfies some of the criteria for *shariah* compliance; however the integration of Islamic values in the courses is still in early stages. These findings are useful in future development of IOK which will benefit QS graduates and help establish IIUM towards a*shariah* compliant university.

Key words: Islamisation, *shariah* compliant, quantity surveying curriculum, perception

INTRODUCTION

Islam is the complete way of life:and as such, education, and more so university education,is central to creating professionals with principles. Nowadays, *Shariah* compliance has become the standard in many areas such as banking and insurance. In education it is the Islamisation of knowledge (IOK). It is possible that one day even Quantity Surveying could be shaped to be *Shariah*-compliant. Thus, IIUM has designed the curriculum not only to deliver knowledge but also to instillin the students Islamic values so that they can become intellectually strong and spiritually sound citizens of this world.

PROBLEM STATEMENT

As an Islamic university, IIUM has a distinct mission that distinguishes it from other universities in Malaysia. As stated on the IIUM official website, IIUM mission is one that is based on the concept of IIICE (Integration, Islamisation, Internationalisation and Comprehensive Excellent)

also known as "triple I, CE".It is inspired by "*Tawhid"* and the Islamic philosophy of the unity of knowledge; as well as its concept of holistic education. And since Islamis the mission at this university, it is critical that the curriculum for the Quantity Survey programmehas the IIUM's mission as its bearing.

Education in Islam is not just for Muslimsand it is not a mere tool for competing with others. Islam is a broad-based and inclusive religion. MohamadIqbalAbWahab(2011) claims that the process of deislamisation has taken place in IIUM. He opines that the curriculum claims to be Islamic but derives its content from work published by the West. Citing the study of economics as one example, he questions why Islamic economy is taught on the platform of capitalism, with Islamic principles receiving only casual attention. He also shares the irony that while IIUM imposes subjects such as "Islamic World View", "Islam, Knowledge and Civilisation" and "Ethic and *Fiqh* for Everyday Life", students only take them as "easy subjects to score" and not as real practice in their daily lives. If it is true that the process of deislamisationhas taken place, this means the IIUM mission is in danger of being side-lined.

At the same time, the meaning of Islamization of knowledge to achieve *Shariah*-compliant Quantity Surveyor – its criteria and character - need to be made clear.More importantly, the curriculum needs to be moulded to be effective in training the Quantity Surveyors of the future who, as *Shariah*-compliant professionals, possess the necessary expertise to contribute to nation building with integrity.

In order to become the standard bearer in the Islamization of knowledge and the creation of *Shariah*-compliant QS, the curriculum must integrate knowledge and its delivery in a way that is compatible with *Shariah* requirements. As a pioneering curriculum in QS education and training, IIUM must set the bar high and achieve a uniqueness that sets it apart from the rest of the world.

AIMS& OBJECTIVES
Aims
The aims of this study are to determine whether the existing QS curriculum satisfies some of the criteria for *shariah* compliance; as well as the level of integration of Islamic values in the courses.

Objectives
i.   To identify the characteristics of *Shariah*-Compliant Quantity Surveyor
ii.   To study the implementation of integration of knowledge in IIUM's curriculum for Quantity Surveyor students
iii.   To suggest improvements that could be made in order to develop current curriculum system

SCOPE OF RESEARCH
The research was focused on the International Islamic University Malaysia's (IIUM) Curriculum for Quantity Surveying courses. Since IIUM is an Islamic university, the curriculum must be in

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line with Islamic principles derived from the *Al-Quran* and *Sunnah*. Particular attention was made to the incorporation of the concept of IIICE (Integration, Internationalization, Islamization and Comprehensive Excellence).

DEFINITION OF *SHARIAH* COMPLIANCE

According to SayyidQutb, a prominent Islamic jurist, *Shariah* refers to "everything legislated by God for ordering man's life; it includes the principles of belief, principles of administration and justice, principles of morality and human relationships, and principles of knowledge". This definition is perfectly in keeping with the notion that *Shariah* is a complete life's manual handed down by the Creator for His creations, for all people.

Ahmed ZakiYamani (1980) noted there are basically four primary sources of *Shariah*. At the pinnacle the *Al-Quran*. At the second layer lies the *As-Sunnah* which is the conduct of Prophet Muhammad in living and explaining the *Al-Quran*. The third layer is *ijma*, which refers to the doctrinal consensus among the Muslim community. Analogical reasoning, or *qiyas*, constitutes the fourth and last layer". In practice, the formulation and codification of *Shariah* laws very much depended on the situation: if one is unable to derive it from the first layer, he shall fall back on the second layer and so on and so forth.

KhurramMurad (1981) stated that*Shariah* is divinely ordained way of life for men that to realise the divine, men shall adhere to the *Shariah*. Therefore, to give up the Shariah means to give up in Islam. Hence, men shall implement *Shariah* no matter in what circumstances they are since *Shariah* is comprehensive to be adapted in this life even with any nations, race and time.

DEFINITION OF QUANTITY SURVEYOR

According to the Royal Institution of Chartered Surveyors (2012) a Quantity Surveyor is an expert in the art of costing a building at all its stages. Quantity Surveyors are highly trained professionals offering expert advice on construction costs. They are essential for life cycle costing, cost planning, procurement and tendering, contract administration and commercial management.

DEFINITION OF CURRICULUM

While, as stated by Stark and Lattuca(1997) "To remedy the lack of a comprehensive definition of curriculum, we suggest defining the curriculum as an "academic plan". This includes the subjects that the students must take in order to pass the examination and the lectures they have to attend during their study. The students shall also adhere to any regulations relating to their study plan as provided by the university.

Whereas as stated by Toombs and Tierney (1991), academic plan then needs to be structuredaccording to the time required and based on the discipline of knowledge to suit the student's academic level.

DEFINITION OF CURRICULUM FROM ISLAMIC PERSPECTIVE

Al-Attas (1980) mentioned that the purpose of seeking knowledge is to encourage the goodness in man as man and also as individual. Thus, the end of the education could produce a good man. Al-Attas also defined a good man as one who posses good *adab*(moral behavior). Hence, the knowledge should be able to produce the person who able to be good to people but also who able to make good use of the knowledge he gain that able to benefited others.

In Arabic, the term curriculum translated from the word "*manhaj*" which means "clear path or the clear path travelled by man in their life" as stated by Al-Syaibanyand translated by Hassan Langgulung in 1987. The teacher or lecturer themselves have to go through the clear path in order for them to be able to educate their students in a holistic manner.The knowledge delivered should not be strict but be exploratory in nature.

The Islamic perspective on curriculum stresses on ethical aspects and shall be integrated with knowledge, as according to Jalaluddin (2003), when the term curriculum is to be related with Islamic philosophy, the curriculum must be connected and integrated with the purpose to achieve noble morality (*Al-Karimah*). Therefore, the students who go through the Islamic curriculum are expected to have good character on top of being excellent in their field of expertise.

AgusTrianto (2008), mentioned that total Islamic Curriculum plan to become *qaulansadiida* (firm in upholding the truth) to produce the generation who put their *taqwa* totally to Allah (*Taqwa* is a high state of heart, which keeps one conscious of Allah's presence and His Knowledge, and it motivates him to perform righteous deeds and avoid those, which are forbidden.). For this reason, curriculum should be able to create the spirit of *taqwa* to Allah. The student then understands the knowledge and at the same time has the responsibility to perform their job accordingly that in line with the rule and regulation provided in Al-Quran and *As-Sunnah*.

A word on Western-style education: according to Mahar Abdul Haq (1990), "Ego-centricity was essentially the premise upon which early education thought was build and, in one way or the other, this individualistic bias has persisted since then".
On such a principle the product of western would surely be different.

RESEARCH METHODOLOGY

For this study, the methods used were quantitative and qualitative. Quantitative research provides data that can be measured. Meanwhile, qualitative approach relates to the natural setting and one tries to interpret from his/her perspective according to their experience, knowledge and environment.

RESPONDENTS OF THE STUDY

There were two categories of samples, taken from the interviews with lecturers of various faculties: Kulliyyah of Architecture and Environmental Design (KAED), Institute of Education (INSTEAD), Ahmad Ibrahim Kulliyyah of Law (AIKOL) and Kulliyyah of Islamic Revealed Knowledge and Human Sciences (IRKHS) and members of the board of studies during the

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establishment of KAED. Apart from that66 students of the Quantity Surveying Department participated in the survey.

RESEARCH INSTRUMENT

For the purpose of this study, interview and survey-questionnaire instruments were. The interview consisted of ten questions related to the curriculum in IIUM The interview questions were modeled after curriculum perspectives to the subjects taught. This was to assess the university's progress in integrating Islamic perspectives into the curriculum.

The survey questionnaireswere distributed to the students. The questionswere adapted from Arifin Mamat (2012),and were modified to suit the target studentrespondents. The questionnaire was structured using Likert format with five-point response scale. In this type of questionnaire, the respondent was given five options to answer the question. In essence, it measured the scale of agreement and disagreement of the respondents.

Data collection during the interviews consisted of ten questions and they are:
1. What is the definition of *Shariah*-compliance?
2. What do you think about Quantity Surveyor's work?
3. What is curriculum?
4. In your opinion, how far has the integration of Islam been practiced in IIUM?
5. Based on your observation, do you think IIUM will be able to produce *Shariah*- compliant graduates?
6. How to improve the curriculum in IIUM?
7. What are the constraints?
8. Why *Shariah*-compliant graduates are important?
9. Is there any example from other universities that you know of, where integration of Islamic values in the curriculum has been successful.
10. Do you think that we will be able to comply with Islamic education requirements one day?

Simultaneously, the survey- questionnaire had been distributed to 1st to 4th year Quantity Surveying students. The survey was undertaken in order to gather the student's opinion on the Islamization of Knowledge that they might have gained during their study in IIUM. The total number of respondents was 66, comprising 24% of first year students, 23% of second year students, 3% of third year students and 50% of fourth year students. The small percentage of third year student respondents was due to the practical training they had to dooff campus.

DATA ANALYSIS

The data analysis was (1) a summary from the perspectives of the members of Board of Studies during the establishment of KAED, from lecturers from in the various Kulliyahs and (2) survey response from first year to fourth year students.

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Inteviews of Members of the Board of Studies

The implementation of the integration of knowledge specifically to the students from the Quantity Surveying Department is generally acceptable. Professor M. Kamal emphasized that some Kulliyyahshaveachieved greater success while some other Kulliyyahshave not, especially KAED where the subjects are technical. Interestingly, subjects such as UNGS ("Islamic World View", "Islam, knowledge and Civilisation" and "Ethic and Fiqh for Everyday Life"), *Quran &Sunnah* for Built Environment and Principles of Islamic Procurement, were found to be helpful in facilitating the students' understanding on how Islam is to be implemented in life.

Interviews of the Lecturers of various Kulliyyahs

The character of the *Shariah*-compliant Quantity Surveyor must be in line with *Shariah*, as espoused in *Al-Quran* and *As-Sunnah*. It must also include*MaqasidShariah* (objective) and *SiyasahShar'iyyah* (public interest). According to MohdZambroMuda (2008), *MaqasidShariah*is the objective (*ghayat*) and secret (*asrar*). *Maqasid* studies the fundamental issues of Syara' derived from *Al-Quran* and *As-Sunnah*. *Maqasid*is further divided into *Maqasid'Ammah*(general area), *MaqasidKhassah* (specific areas such as judicial) and *MaqasidJuz'iyyah* (laws of *Taklifi* and *Wad'i* such as solemnization and *talaq*). Meanwhile, *SiyasahShar'iyyah* is about the laws and regulations related to the management of a country and her people, in realizing *Maslahah 'Ammah*(general well-being).

The implementation of the integration of knowledge depends on the individual *Kulliyyah*. AIKOL and KIRKHS have compliedbetter with the integration initiative since they began the effort earlier than the establishment of KAED and most of its core subjects are philosophy-based. In KAED, certain subjects such as *Al-Quran* and *As-Sunnah* for Built Environment and Principles of Islamic Procurement are infused with Islamic perspectives and form part of the core study. Nevertheless, some lecturers claimed that the integration of knowledge has not been fully practiced and would entail long process. The reasons are:

a)   The lecturers and students must both be ready to adapt to any changes
b)   UNGS subjects ("Islamic World View", "Islam, Knowledge and Civilisation" and "Ethics and *Fiqh* for everyday life") and core subjects are difficultto be integrated by the student
c)   Highlighting the Islamic perspective in class totally depends on the lecturer and most lecturers do not possess sufficient Islamic knowledge
d)   Weak follow-through has dampened implementation

Data Analysis from Student's Survey

Most students agreed thattheir lecturershave taught the subjects in line with the effort of Islamisation of Knowledge. On the other hand, they pointed out that Islamisation does not permeate the entire subjectsare technical. This is permissible as long as they do not contradict any Islamic teaching and is aimed at achieving the greater good of the community. Sometimes, the lecturer also instructs and emphasizesIslamisation of Knowledge (IOK) in certain exercises and assignments. This indicates that some lecturers do desire and actively attempt to put into practice Islamisation of Knowledge, whenever possible. This is shown in the following tables.

I believe that Islamization of Knowledge (IOK) is:

Scale

1= Strongly Disagree (SD)
2= Disagree (D)
3= Neutral (N)
4= Agree (A)
5= Strongly Agree (SA)

Statements	5	4	3	2	1	Weight Mean	Interpretation
1. An important mission of IIUM	44	13	6	2	1	4.47	Strongly Agree
2. A unique experience to IIUM only	20	24	15	6	1	3.85	Agree
3. A successful story for IIUM	17	22	24		3	3.76	Agree
4. A challenge to IIUM	26	24	9	5	2	4.02	Agree
5. An overemphasized mission	8	10	34	6	8	3.06	Neutral
6. An enterprise of certain quarters in IIUM	5	21	33	5	2	3.33	Neutral
7. A continuous process for IIUM establishment	22	31	11	2		4.11	Agree

Table 1: *Result of Student's Survey*

The content of the Subject delivered by the lecturer:

Scale

1= Never (N)
2= Seldom (S)
3= Sometimes (ST)
4= Most of the Time (MT)
5= Always (A)

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Statements	5	4	3	2	1	Weight Mean	Interpretation
1. Integrate IOK	13	23	27	2	1	3.68	Most of the time
2. Emphasized IOK on certain weeks of the course outline only	3	18	35	6	4	3.15	Sometimes
3. Is difficult to be integrated with IOK	3	11	27	18	7	2.77	Sometimes
4. Is all about IOK	5	16	24	17	4	3.02	Sometimes
5. Is integrated superficially with IOK	6	27	29	3	1	3.52	Most of the time
6. Indicates IOK in the learning outcome only	2	17	37	6	4	3.11	Sometimes
7. Indicates IOK in exercises and assignments	7	23	28	8		3.44	Sometimes

Table 2: *Result of Lecturer's Survey*

Comparison on the Views Given by Members of the Board of Studies, Lecturers and Students

As conclusion, members of the Board of Studies and the lecturers agreed that the *Shariah*-compliance should be basedon*Al-Quran* and *As-Sunnah,*as the main sources. Anything that contradicts either one of the two main sources is considered NOT *Shariah*-compliance.As expected, it was observed that there was a difference in opinion betweenthe members of the Board of Studies and lecturers and the students on the matter of the integration of knowledge. The students stated that the effort to integrate knowledge was implemented most of the time while the lecturers said that not all subjects were fully integrated. Moreover, members of the Board of Studies confirmed that some *Kulliyyahs* are better able to integrate than others due to the nature of the subjects taught, as well as the lecturers' familiarity with the subject of Islam.

CONCLUSION

Firstly, the characteristics of the *Shariah*-compliant Quantity Surveyor could be realised through the curriculum that is in line with the university's mission and vision. The IIUM's mission and vision are based on the concept of IIICE (Integration, Islamisation, Internationalisation and Comprehensive Excellent) also known as "triple ICE". The vision of this university is "Inspired by the worldview of *Tawhid* and the Islamic philosophy of the unity of knowledge as well as its concept of holistic education".

Secondly, the integration of Islamic knowledge has not yet been fully achieved especially in the *Kulliyah* of Architecture and Environmental Design (KAED) and is still in progress.

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APPLICATION OF SHARIA PRINCIPLES IN PLANNING AND DESIGNING *PONDOK PESANTREN* IN INDONESIA
Case Study: PondokPesantrenAl FathMa'had in Palembang, South Sumatera

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ABSTRACT

PondokPesantren (Islamic Boarding School) as one of the educational institutions in Indonesia, which emphasizes on Islamic religious education, have had different and specific approach in the planning and designing of its facilities, compared with the process of planning and designing the school in general.

Although there is no specific design typology of the *pondokpesantren's*buildings and facilities, the planning, designing and development process of its contains a special approaches using the Sharia principles derived from the Islamic jurisprudence known as *Fiqh*.

The acculturation of *pesantren* educational organizations and formal educational organizations such as public school, along with the architect's involvement in the *pondokpesantren's*development process in modern times can potentially obscure the Islamic values in the life of *pondokpesantren,* where the principles and values of sharia should be the main characteristics of *pondokpesantren*itself.

This paper studied the principles of Sharia and its application in the process of planning, designing and construction of a *shar'ipondokpesantren*in Indonesia, through a case study of PondokPesantren Al FathMa'had in Palembang. Islamic Sharia principles in the development of *pondokpesantren*are gained through the study of literature and the books of *Fiqh* as well as interviews with experts of Islamic law.

Application of Sharia principles in the planning and designing of the *pondokpesantren* covers ranging from the determination of the legal status of the site; mosque planning, laws and conditions attached to the mosque; zoning activities as well as planning and designing of buildings and supporting facilities; dormitory planning; rules of interior design related to *pesantren's style* teaching-learning activities; until the affairs of *Waqf* of the residential buildings of *Kyai* (school headmaster) or teachers.

Keywords: Indonesia, planning and designing, *pondokpesantren*, Sharia principles, Islamic education.

INTRODUCTION

Islam governs all aspects of human life in this world in order to achieve the balance between worldly and hereafter. This rule is known as Sharia principles rooted in two basic; Quran and Hadith of the Prophet Muhammad PBUH. This includes the planning and designing process to the construction of a *pondokpesantren*, as a facility of *ummah's*education activities.

PondokPesantren(Indonesia's Islamic boarding school), as one of educational institution that emphasizes the teachings of Islam, has a specific approach in the development process. Starting from establishment initiation, planning, designing to construction even on day-to-day

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operational use.*Muassis* (founder / builder of schools) need to understand the principles of Sharia so that the product of this creative process still has an Islamic spiritual value.

Unlike the process of planning and designing a secular educational institution that starts from a curriculum that is applied as a basis for planning facilities, at *pondokpesantren*, the process is depends on the background, understanding, outlook and mindset of the *Kyai* as a major figure in *pesantren*. Elements that could be a uniform rule in the development process are the usage of Islamic principles that later became the order of life in the compound.

In the subsequent discussion, the principles of Islamic law derived from the *Shafi'i* school of thought. Today, the school is the dominant school of jurisprudence amongst the Ahlus-SunnahwalJama'ah (Sunni Muslims) in Southeast Asia, particularly in Indonesia.

BASIC CONCEPT IN PLANNING *PONDOK PESANTREN*

Pesantren comes from the Javanese word; *pe-santri-an*, which means gathering place for *santri*. *Santri*itself means boarding students. The word *pondok*comes from Arabic word; *funduuq* which means inn. Thus, the definition of *pondokpesantren* is a place of students studying religion, where they settled and lived there during the period of study. They learn religious knowledge and values of life from their teacher called *Kyai*.

All forms of policies and considerations in *pondokpesantren* rely on the figure of the *Kyai. Kyai* is the central figure of a *pondokpesantren*, where *santris*are expected to be able to inherit the values, morals and the character of the *Kyai*. Therefore, the involvement of outside parties out of a *pesantren* environment inside the *muassis*- usually represented by an architect or even a donors–has to be based on the considerations and policies of the *Kyai* in making decisions in planning facilities. Application of Sharia principles that is mastered by *Kyai*is a primary basis of the planning other than the architectural technical and theory considerations of a building or infrastructure.Thus, the principles of Sharia in the planning and designing process are important to be prioritized and implemented.

Apart from being a place of *shalat* as the most fundamental prayer, *Masjid* (the mosque) also serves as a center of education in *pondokpesantren*. This is in accordance with the guidance of the Prophet PBUH that *masjid* is the center of Islamic education. The next stage after the planning and construction of *masjid* is a dormitory facility as a residence for *santris* studying in the compound. Dormitory occupies an important role because it not only serves as a residence of *santri*, but also serves as a place of mental education of values of simplicity, independence, sincerity and self-control.

Values of *pondokpesantren* life strictly separate between male and female*santri*. Area of female*santri* is seen as something that cannot just be accessed from the outside world, even though by fellow residents. Male*santri* strictly forbidden be in the female*santri's* area. And vice versa, to keep and protect the female*santri* they also cannot be in the area of male area.

Social values in *pondokpesantren* arefamily values, with *Kyai* as head of the family. Thus, the female*santri* other than get education from *Kyai*, they also are guided by*Kyai's* wife, commonly called *IbuNyai*. The female*santri* area are placed close and can be directly accessed from the *Kyai's* residence so *IbuNyai* can directly monitor the female*santri*as her own daughter. To enter the inside of the compound, the access between female*santri* is different with the

guest's and male *santri's* access. Female*santri's* access passes *Kyai's* residence area, so *IbuNyai* can directly monitors who's in and out of female*santri*area.

Placing the male *santri's* facilities as well as female *santri's* facilities in separate area later developed such planning. This separation also applies to studying facility with separate classrooms between male and female *santri* as well as the worship facility. *Masjid*is more intended for male *santri* and the general guests, while the female *santri* have their own *musholla* in their area, which can stillbe counted as a part of *masjid*. For a discussion of planning *masjid* and *musholla*will be discussed later.

This layout concept is known as a Javanese traditional *pesantren*layout. In this layout concept, the building or facilities can be grouped into 8 main groups, namely; (1) *Masjid*. (2) *Kyai's* residence area, (3) Female *santri* dormitory area, (4) Educational facilities, (5) Male *santri* dormitory area, (6) Supporting facilities, (7) Female *santri's* service area, and (8) Male *santri's* service area.
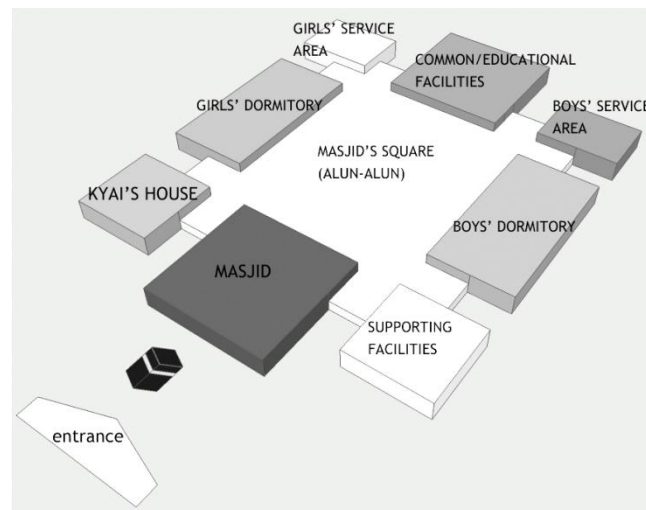

Figure 1: *Conceptual basic layout of Javanese traditional pondokpesantren.*

This kind of layout also has a Javanese cosmologic concept, with all buildings are placed around a field/open space that serves as a public square or *alun-alun*. *Alun-alun* is also serves as extending space of *masjid* as well as a firm separation between male and female *santri* activities area. The main axis of this arrangement is to put *masjid* and educational facilities (schools) as two different symbolic poles. Educational facility as the symbol of the living world and Hereafter is symbolized by *masjid*. These two opposing poles separated by a plaza or *alun-alun*.

Kyai's residence is positioned between *masjid* and the female *santri's* dorm area. Therefore, there will be a separation between the access to*Kyai's* residenceand female *santri's*dormitory area, and the access to *masjid*, male *santri's*area and other amenities. This arrangement also answers the demands of protection for female *santri* by *Kyai* family, which *Kyai* also symbolically serve as a *santri's* surrogate parent.

The main entrance to the complex is to *masjid*. Directly intended to be reached easily by people who intend to worship there, both from outside and from within *pesantren*. Then spread to the male *santri's* area, school's supporting facilities, with no direct access to the female

*santri's*dormitory area. Supporting facilities that related to economy activities, typically placed adjacent to the main entrance gate of *masjid*and, thus minimizing the entry of outsiders into the complex.

The livelihood of a *pondokpesantren*also depends on how the *Kyai'*s activity as head of the family and the family breadwinner. In addition to teaching the *santris*, at the beginning of the development of Indonesia's *pondokpesantren*, *Kyai* also make a living like other common people such as farming or trading. Frequently,*santri* helps the *Kyai* in order to support the *pondokpesantren*, and a lot of economic activity is formalized by setting up forms of business units commonly known as Kopontren (*pondokpesantren's*cooperative).

SHARIA PRINCIPLES IN PLANNING OF MAIN COMPONENTS OF *PONDOK PESANTREN*

The *Masjid*

Masjid is the most important facility in *pondokpesantren*. The fulfillment of basic needs for worship as the main philosophy in building a *pondokpesantren*begins with the establishment of *masjid*. *Kyai*, after being a *muassis*, then the first to be built was *masjid*. It will serves as a central of *pesantren* activities, both religious activities and education activities.

Islam has a certain rules of building a *masjid* in accordance to hadith of Prophet PBUH. In principle, *masjid* should be able to accommodate and facilitate one's intention to worship. Therefore, first this discussion should understand two definitions of *masjid*, in terminology and in epistemology.

In terminology, *masjid* implies to building of places of worship of Muslims, completed with its supporting facilities such as parking, toilets, ablution places, libraries, etc. This can be a general definition of a *masjid* that common people used to know. While in epistemology, *masjid* means a place / space / building that is intended (*waqf*) to be a Muslim place of worship. This means that when the space / place / building is certified as a *masjid*, then all rights and sharia law of a *masjid* will be applied even when the space / place is still a vacant lot, and its borders should be clearly stated in the *waqf*certificate. Rights and the law of a *masjid* (hereinafter referred to as the *masjid'*s core area) are:

- *I'tikaf*be legitimate in the certified room / place / building.
- The room/place is a holy place, meaning that a menstruating woman and a man who was at greatritual impurity barred from entering the masjid.
- Do not throw dirt or filth in the space / place / building.
- Do not discuss the affairs of the world in it. These include, such as, trading, announcing lost items, etc..

Referring to those rules, then the *masjid's* supporting facilities must be placed outside of the spaceintended or declared as the core area of a *masjid*.

The basic principles of a *masjid* are it should be able to accommodate one's intention to worship in the *masjid* and to facilitate education and other social activities for *ummah*. Anticipation to these needs are include:

- Creating sufficient or even wider verandah out of the *masjid's* core area. Activities that are not in accordance with law and the rights, but associated with the religious activity in the core of a *masjid* can be done in this area.
- The statement of designating place to be a *masjid's* core area is took place after the building was completed. The law and the rights of *masjid* will only bind the room that designated as *masjid's* core area, not on the land where the building is located. It is common in the building that has other functions,such as *masjid*in a commercial building with function rooms on the floor above or below it.

The next stage in planning a *masjid* is to ensure that someone who prays in it and at its terrace can be legitimate if following (as a *makmuum)* the *Imam*who is in the core of the *masjid*. The basic guidanceare:

- All rows of the entire congregation shall be in rows behind the *Imam*.
- *Alaqoh* or the creation of a direct link if the *Imam*accidentally canceled the prayer, each *makmuum*(congregation) could replace him at *Imam*position. Each *makmuum* should be able to walk straight toward to the *Imam*by stepping forward or / and with small turn without having to turn around his back to the *Imam* or the *Qiblah* in that process.

This *alaqoh* provision applies to the *makmuum* whose position was on the terrace of the *masjid*, outside the core area of a *masjid*. This provision by many scholars of *fiqh* does not apply to the *makmuum* in the same room with *Imam* because in the masjid's core area, required no barrier between the *makmuum* and the *Imam*.

Similarly to masjid with two or more floors, *makmuum* who are on the upper floors will remain valid when following the prayer to the *Imam* on the main floor with conditions: (1) The second floor onwards have to be directly above the core area of *masjid*, so according to the law,those upper floorsare part of the core of a *masjid*. (2) Staircase that connects those floors is located in the core area, without any rule for its exact position, andwalking up / down on the stairs is not required to always be facing the *Qiblah*. (3) The movements of the *Imam*can be known by the *makmuum* either by eye or by hearing (MUI Fatwa dated June 27, 1983).

Above provisions affect the planning and design of the *masjid*, especially in the setting of human circulation within the *masjid* and the design of the *masjid*'s building openings. Connecting way is required whose function as a door opening, not as a window even though with the same dimensions to the door. This door should be opened or closed without being locked when the congregation prayers are being conducted. This way of connection is called *manfadz*.
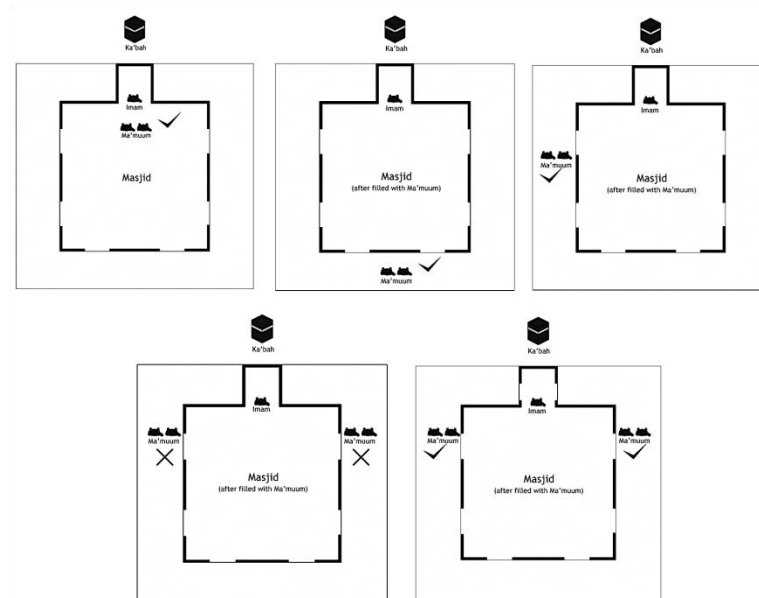
Figure 2: *The correlation between makmuumposition and door openings in order to have a legit congregation prayer*

These conditions can be anticipated by placing doors on either side of the *mihrab*, which can be opened to the outside and left unlocked at the time of prayers. So in case of overflow *makmuum* pray until the extended outside / beside of *masjid,* then the limit of their first row is parallel to the *makmuum* that is in the core of a *masjid*.

The Prophet PBUH also stated that the bestpositions of women in *masjid* are on the last rows and virtuous women are to conduct prayer at home. Focused on these considerations, at the female *santri's* area, a *musholla*is built with a capacity that is considered sufficient for the center of worship of the female *santri*. This *musholla* is planned with provisions so that when congregation prayers took place in the *masjid*, female *santri* is still valid when following *Imam* at the *masjid* as a *makmuum*, although the prayer itself performed in female's *musholla*. Provisions that must be met include: (1) The distance between interrupted rows from the last row in the *masjid* with the front row of the next *makmuum* (in the *musholla*) not more than 300 *dzira'* (approximately 148 m), where at the interrupted rows is not laying a road that people are always through it all the time (so it is impossible to close it), and no river (without a bridge). (2) When walking towards the *Imam* in the masjid, should not be turned his/her back to the *Qiblah*. (3) The movements of the *Imam* can be seen visually through the last *makmuum* in the *masjid*and / or can be monitored from the hearing.

The Dormitory

Santri's dormitory is the second major component in the *pondokpesantren*after the *masjid*, because it serves as a residence for *santri*and as an everyday living environment.Prerequisite of facilities at the dorm are:

- Must be able to accommodate the domestic activities of the *santri.*
- Must have a sufficient level of hygiene. The main source of the spread of the disease among *santri,* is caused by low public hygiene which originated from the dormitory.

This in line with the *sunnah* of the Prophet PBUH said that cleanliness is part of faith. The main concern in maintaining the sanitation of the dormitory is planning a bathroom and toilet area. Terms of a good planning the shower and toilet are:

- Be able to cover one's body so cannot be seen from outside
- There is a good cross-ventilation so that air circulation is good
- There is sufficient direct sunlight wherever possible
- Always dry and not leave stagnant used water and good drainage

The uniqueness of life and values of a *pondokpesantren*are in the dorm life. Therefore, they are made to sleep together in one room with no partition between beds. The barracks arrangement of beds in one room is considered less appropriate with the life values, because there is an ineffective of dorm informal organizational structure.The dorm room with a capacity of 15-20 beds per room ispreferred, because the organization of the leader of the rooms (called *lurah*) that is answering to the dorm supervisor(usually held by a youngteacher/*ustadz* who is still single) can be applied. These *ustadzs*that directly monitor, guide and supervise *santris*in the dorm, because they also live in a dorm, even in a separate room.

There are several types of arranging other domestic activities such as eating, bathing and laundry. Some built the dining area and toilets attached to the dormitory building, some are separate. There is no specific guideline about it, as long as the supervision of *santri* and environmental hygiene is well maintained.

The Educational Facilities

Educational facilities, which are represented by classes and libraries, also made a pair, each for male and female *santri*. Laboratory classes are usually made only one for each type. The using of them are set up so male and female *santri* cannot be met. It is also an efficient approach in optimizing the space.

The method of teaching at a *pondokpesantren* is divided in two ways; *sorogan*and*bandongan/wetonan.Sorogan* means individualized teaching where *santri* is teached directly by *Kyai* or *ustadz*. It usually takes place on the front porch of *Kyai's*residence or in the *masjid*.

The main methods of teaching in *pondokpesantren* is*bandongan / wetonan*. This is the collective method, where a number of *santris* are studying together under the guidance of *ustadz* or *Kyai*. This group of *santris* called the *halaqah* is sitting around facing to *ustadz* / *Kyai* who read, teach or discuss the religious knowledge of old books or the Qur'an and hadith. There is no special rule where the learning activity of this *halaqah* takes place. However, in order to the establishment of a more formal learning environment, in addition to the *masjid*, classrooms are provided for *halaqah* studying.

There is a general rule in this *bandongan* method. Number of students is about 20 *santris* per *halaqah*, because this amount is considered to be the most effective in knowledge transfer. *Ustadz* will be easier to monitor progress of *santri* individually and *santris* are also in a relaxed

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position but still can maintain their concentration. *Santri* sits cross-legged around the *ustadz/ Kyai* who sat on a chair or bench. Distance between *santris* like they were praying in congregation, but the distance between nearest *santri*and *ustadz/ Kyai* is not less than 3 *hasta* (1 *hasta: ±* 45 cm) and a maximum of about 30 *hasta* to the farthest *santri*. Thus, it can be estimated the average dimension of the space required by one *halaqah*.

Another requirement of the space of teaching *bandongan* methods: (1) The place used for it is not a place where people passing by. (2) It is not disturbed by the sounds of other activities. (3) There must be no objects or pictures inside the room that can distract the *santri's* concentration. These three requirements are intended to comply with the principle that studying should concentrate, as if the humility congregation in prayers.

*Kyai's*Family Residence and *Ustadz* Official House

It is not common for *Kyai's* family home is built along with the construction of other facilities in *pondokpesantren*. Which commonly occurs is there was an*Alim* (the man with good knowledge of Islam) who lived in some place and settled there and began to teach religious knowledge to others. At the moment this *Alim* accept students who studied at his residence, then he is called *Kyai* and he will serve into a *muassis*when initiated to build a *pondokpesantren*.

Therefore, the family home of *Kyai's*is always beingthere first compared to the presence of other facilities. Sometimes it is inside the complex, but not infrequently also outside the complex. Indeed, despite being in a *pondokpesantren* compound, the legal status of the *Kyai's* residence's land is not associated with the land's legal status of the *pondokpesantren's*. The land's legal status used to build a *pesantren*facility generally is the *waqf*certified land specially designated for *pondokpesantren* and its activities. While the land status where the *Kyai's* family lived is remain a private property of the *Kyai's*.

This is considered important and fundamental matters in establishing the *pondokpesantren*, because it involves the rights, the legal status and the principle of land use. The use of *waqf* certified land for activities other than its *waqf*use intention is strictly prohibited. It would be prohibited if *Kyai's* family home werebuilt on *waqf* land designated for *pesantren*,the results or benefits of using it are not returned to the *pesantren* needs.

Unlike the *ustadz*official residence, its status is considered equal with the *pondokpesantren*'s facilities and their use is only for the purpose of *pondokpesantren*. These official house users are the mandated use of the facility as a means of devotion to teaching in a *pondokpesantren*. Other than that, the use of the officialhouse for personal activities is strictly prohibited. So, people who are assessed have made smaller contribution to the *pondokpesantren* could have been revoked from his mandate to continue to use the official residence.

APPLICATION OF SHARIA PRINCIPLES AND ISLAMIC VALUES IN ARCHITECTURE AND INTERIOR DESIGN OF THE CASE STUDY

This section will be discussing how the applications of Sharia principles on the PondokPesantren Al FathMa'had in Palembang as a comprehensive project in building a *pondokpesantren*that started from scratch in a vacant site. The discussion will be divided into sections of its main elements from the complex.

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Layout and Zoning

At the PondokPesantren Al FathMa'had in Palembang, the basic concept of layout and zoning is derived from Javanesepattern, with the grouping area as follows: (1) Area Commercial / office, (2) *Masjid*, (3) Supporting Facilities, (4) Guest Houses, (5) Male and Female *Santri's* Dormitory, (6) Male and Female School Area, (7) Multipurpose Building and Library, (8) *Kyai's* family residence, and (9) *Ustadz's*official house area.

Figure 3: *The aerial view of PondokPesantren Al FathMa'had Palembang*
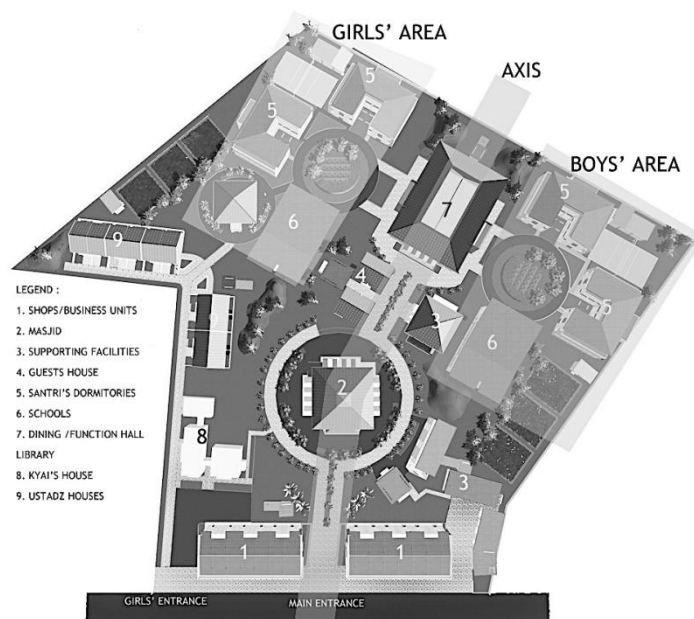
Figure 4: *The site plan of PondokPesantren Al FathMa'had Palembang*

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Dividing zones in accordance with the hierarchy made the site plan in PondokPesantren Al FathMa'had. The public buildings are placed near the front entrance of the complex and near the area close to the site axis. Thus, further away from the site axis, then the hierarchical of the building will be more private.

Masjid and *Musholla*

Masjid is plannedin two floors. The placement of the staircases leading upper floorare positioned in the back of the *masjid's* core area. The layout of the floor is also planned that the congregation upstairs can visually see the movements of the *Imam*directly.
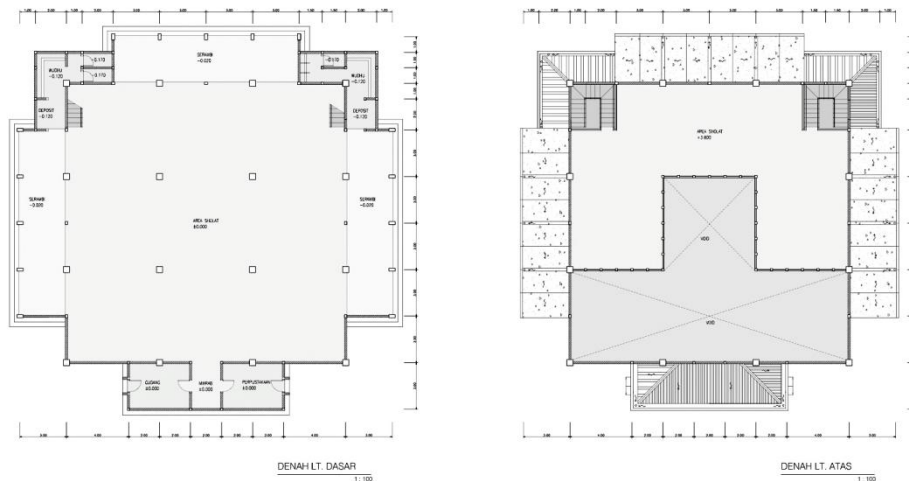
Figure 5: *The floor plan of the Masjid*

The *Masjid* is designed from a simple box-from, as simplicity of form. Built on a circular plan platform, symbolizing no beginning and no end as well as the nature of Allah SWT. It also symbolized the *thawaf*movement that circling the Ka'ba. The using of these forms turns out to be the answer to the planning rules that *masjid*should be facing *Qiblah* and to be flexible to the next stage of the site planning.

Figure 6: *The aerial view of the Masjid*

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According to the rules of the *Salafipesantren,* the masjid in PondokPesantren Al FathMa'had is only intended for men or male *santri*. Female *santri* have their own*musholla* in their dorm area. Thus, the *musholla* at female *santri* area is planned in accordance with the *masjid-musholla* connectivity rule and is designed with no walls. However, it still visually shielded from the male *santri's* zone and other public zones.
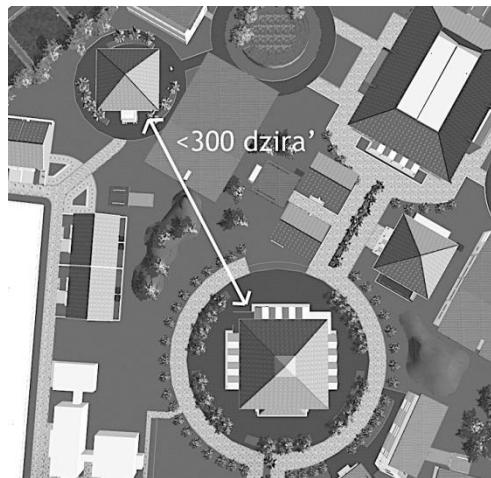
Figure 7: *The distance between the Masjid and the Musholla*

Figure 8: *The design of female santri'smusholla*

Santri's **Dormitory**

In the case study, dormitory is planned with rooms whose maximum capacity of 16 one-bed, with a bunk bed forms (8 sets of bunks). Plan is designed so that circulation that is heading out of the room dormitory building will be monitored through the room of dorm supervisors. To facilitate the activities of daily learning at night, the wide corridor / patio area is made so that can accommodate about 20 *santris* to sit cross-legged.

For neatness and sanitary sake, for every room is equipped with wardrobe room and bathrooms and toilets attached to the room. The ratio between the number of bathroom / toilet and a number of *santri* is 1: 4. Shower and toilet cubicles are separated, so that the usage is more effective.

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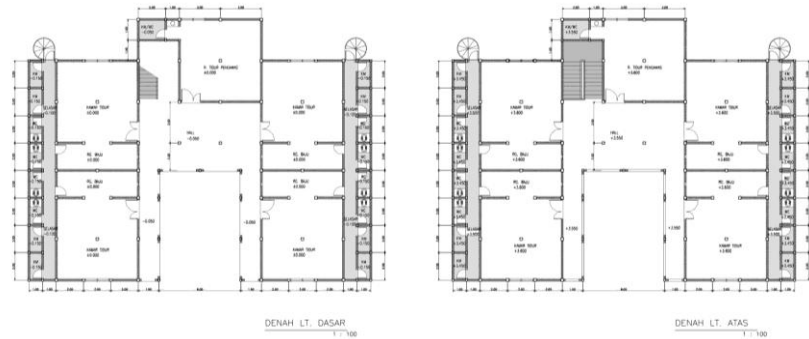
Figure 9: *The typical floor plan of santri'sdormitory*

Figure 10: *The typical design of santri'sdormitory*

Washing and drying facilities in the dormitory complex built separately, into one facility for each of the male and female *santris*. So the dormitory building can always be neat away from hanging drying clothes. In addition, washing clothes together is considered as activities that part of the socialization and relaxation because *santris* can mingle informally with others of different rooms.

Figure 11: *The amphitheater and classrooms building in santri's dormitory area*

The dorm area is designed as clustered zone along with classroom building. Adjacent to the dorm zone, there are also other shared facilities like large dining room and library building. Each dorm cluster has a center of activity that is designed as an amphitheater. The amphitheater also serves as a training ground for *santri's*performance art or preaching.

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Educational Facilities and Common Facilities

In the case study, educational facilities are built into classrooms, whose dimension is spacious enough to accommodate one *halaqah*. Other than that, there is a large class of about 4 *halaqah* capacity for special lecture. These facilities were built for each of the male and female *santri* area.

Figure 12: *The typical floor plan of classrooms building*

Other educational facility is library. Library in the case study is built on a pair each for male and female *santri*, with the same collection as well as the same layout. Laboratory classes are built only one unit per course subject. The usage between male and female *santri* is managed so that they cannot meet each other by adjusting the timetable and the access to the facilities.

Figure 13: *The floor plan of library, large classrooms and dining rooms*

Figure 14: *The design of common facility building*

Libraries and laboratories are placed on the upper floors of the building, in order to get more privacy. On the ground floor were built the dining rooms with separated wall between male and female *santri,* with only one kitchen.

Common facility building is located in the middle area of the male and female *santri* area, so that its position serves as a buffer from the two areas. It is also placed at the end of the axis from the *pondokpesantren*site plan.Other than that, at the main axis of the site plan, is built other facilities such as; guest inn, *Kyai's* guesthouse, *pesantren's*office. For the guest inn and *Kyai's* guesthouse are placed closer to the masjid because they are more public as well as to assert that other than *pondokpesantren* family member, no one is allowed to enter the dorm area.
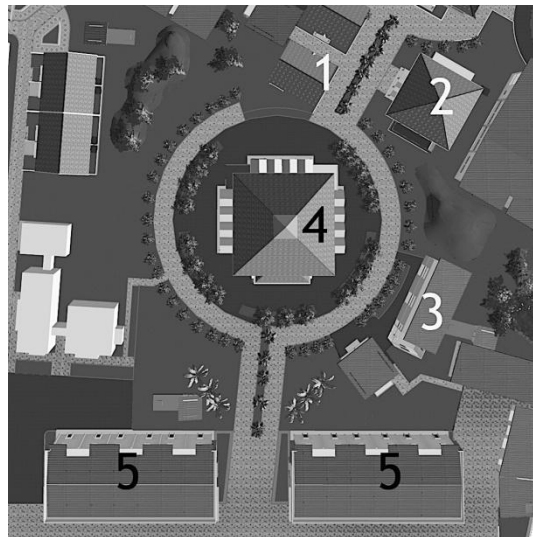
Figure 15: *Kyai's guesthouse area (1), management office (2), and guest inn (3) are placed around the Masjid (4) close to the axis of the site, while the business unit buildings (5) are placed at the entrance area of the complex, before the Masjid*

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In the case study, the economic activity facilities are built into shop house-like building designated to place business units. Because of its direct contact with the public, the building is placed on the shop unit area in front of the complex and also serves as buffer from outer world.

Figure 16: *The design of the business unit buildings*

Kyai's Family Residence and *Ustadz* Official House

As an example of a comprehensive plan, at the case study, the land's legal status of *Kyai's* residence is separated from the *pondokpesantren's* land. Thus, the status of the land is the private property of the *Kyai*. The Kyai free to do other activities, even economic activities that benefits just to *Kyai's* family. However, the *ustadz* official house is considered as part of *pesantren* facilities, so it is built on *waqf* certified of *pondokpesantren's* land.

The placement of *Kyai's* family residence and official house area is close to the female *santri's* dormitory area. Even access to official house and female *santri* dorm had to pass through the *Kyai's* family house area. This was deliberately planned this way so that there is supervision and protection for female *santri*, and also facilitates easy coordination between *ustadz* and *Kyai*.

Figure 17: *The Kyai's residence (1) is closed to the ustadz official house (2), which is having a same access into the female santri's area (3) separated with the main entrance (4)*

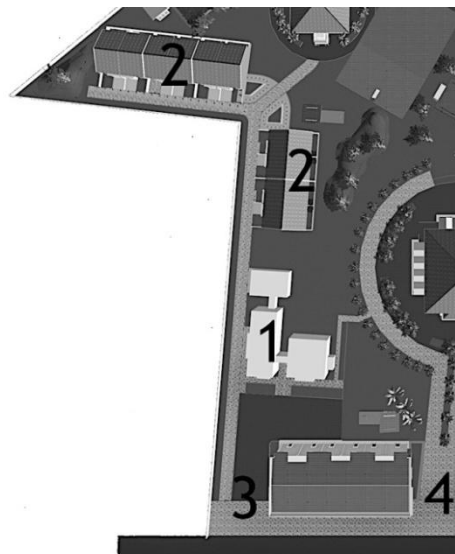International Conference on Architecture and Built Environment 2013 (ICABE2013)
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Islamic Values in Building Appearance

Islamic values to be established in the case study are the beauty, simplicity, multifunctional, conservation and devoutness. The beauty is not achieved with the use of excessive ornament, because it is not recommended in Islam. Beauty is achieved through the planning of space orderly and unity. In addition, beauty can also be achieved with the application of good planning concept as well as the flexibility of the design responding to the principles of Sharia.

The beauty is also accomplished with the simplicity, but remains harmony. The use of the box-shaped as a basic form is symbolizing the simplicity. It also meets the need of a simple structural systems leading to cost saving. Harmony appears in the dealing with the box-shaped form, with the use of the colors that are still in one tone.

The interior design in educational and other facilities in the case study also emphasized the beauty through simplicity to support the concentration, either in worship or studying. Therefore, the interior design is not required to use a lot of colors, minimal ornament, not even allowed to put up pictures or figures of living creatures. This is solely to create an atmosphere that supports the creation of humility in worship and studying.

At the architecture of *masjid*, ornament is also minimized. The use of arabesque patterns on the walls also serves as openings for air circulation. Arabesque patterns used also selected in a simple shape, but still have a symbolic value. Art of calligraphy is not considered necessary for interior decorating.

The multifunctional value is applied by planning spaces that can accommodate different activities, in order to maximized space but saves cost in construction. Dining rooms and large classes are built with walls that can be opened, thus can serve as a multipurpose hall. Service facilities such as building maintenance workshop also made to be a working practice for *santri*. Fishponds are also made in addition to the fulfillment of the needs of the *pondokpesantren*, as well as the practicing facility for farming skills and as a business unit. In addition, these pools also serve as a polder system where high rainfall and recharge the ground less than optimal, given the original site is a stockpiled swamp.

CONCLUSION

Islam is a religion that is modern, contemporary, comprehensive, managing all aspects of life and always actual until the end of time. As for the things that must be considered in planning of *pondokpesantren*with the implementation of Sharia principles are:

1. The main principle is a fulfillment of worship needs as the basis of all the planning so that all actions of planning, from the land's legal status up to daily operational should be based on Sharia.
2. Ensure that all acts of worship performed in it can be legitimate in accordance with its provisions, through *Shar'i*planning and designing.
3. The presence of female *santri* in the *pondokpesantren*has a special meaning, and the Islamic guidelines of treating them mayaffect the entire plan and design.
4. The planning and designing of dormitory facilities are oriented to educate*santri*with the values of independence, simplicity, sincerity and self-control.

5. All the activities that accommodated by the facilities of the *pondokpesantren* are attempted to make the *santri*with character of independent, knowledgeable, morality and godly.
6. Symbols that are commonly used, as an ornament in architecture is not something that is important to be applied to the design of the *pondokpesantren*. The symbols can be used if only they have other functional value, not simply a symbol.
7. Status of *waqf* certified land in accordance with the designated land use for *pesantren*and its facilities must be carefully considered in order not to violate the Islamic laws of jurisprudence.

Pondok PesantrenMa'had Al Fath in Palembang is a case study of planning and designing at an empty site, which is trying to apply the guidelines based on the Islamic principles. This is an ideal process in building worship and educational facilities in Islamic way. This can be achieved if there is good cooperation among *muassis*, whichled by *Kyai*.

GLOSSARY

*Dzira' :*the unit of a length, 1 *dzira'* is approximately 50 cm.
*Hasta :*the unit of a length, 1 *hasta* is approximately 45 cm.
*Imam :*a person who leads a congregation prayer.
*I'tikaf :*a religious ritualself isolation of a person, usually in Ramadhan and take place in a *masjid.* There are also provisions regarding the *i'tikaf.*
*Makmuum :*aperson(s) who follows the *Imam* in a congregation prayer.
*Mihrab :*a small room in front of the *masjid/musholla*designated to place the *Imam* when leading a congregation prayer.
*Muassis :*a person or a committee of the building of a *pondokpesantren,* usually led by *Kyai.*
*Musholla :*a place, room, or building which designated as a place of *shalat*and other religious activity, but not bound by Sharia law of a *masjid.*
*Shalat :*a practice of formal worship of a Muslim. There are mandatory and non mandatory of *shalat.*
*Shafi'i :*a school of thought. One of the schools jurisprudence within the Sunni branch of Islam.
*Shar'i :*a nature of thing or activity that in line to Sharia law.
*Thawaf :*a ritual pilgrimage that circling the Ka'ba, during the Hajj and Umrah.
*Ummah :*Muslim people with a common Islamic ideology and way of life.
*Ustadz :*a teacher in Islamic school.A person with religious of knowledge.
*Qiblah :*a direction that should be faced when a Muslim prays during a *shalat.* It is fixed to the direction of Ka'ba in Mecca, Saudi Arabia.
*Waqf :*an inalienable religious endowment in Islamic law, typically donating a building or plot of land or even cash for Muslimreligious or charitable purposes.

ACKNOWLEDGEMENTS

2. LANAI Architects, Jakarta, as the architect of PondokPesantren Al FathMa'had for providing sufficient data of the design process
3. UstadzUbaidillahChalid, as a sourceof *Fiqh*and discussion partner.
4. Head of Department of Architecture, Faculty of Engineering, BINUS University

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COMPARATIVE STUDY ON URBAN GROWTH PROCESS IN DEVELOPING COUNTRIES: CASE STUDY PHNOM PENH AND KUALA LUMPUR

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ABSTRACT

The purpose of this paper is to study the nature of on-going transition in developing countries, the quality and uncertainty of existing urbanisation process. This paper provides a broad overview on the existing urban growth process and discussing the available evidence on patterns and trends of growth respectively. Two capital cities namely Phnom Penh in Royal Government of Cambodia and Kuala Lumpur in Malaysia were used in assessing the process of urban growth of developing countries. Two different pattern of urban growth process were compared and analysed to establish a real development scenario. Phnom Penh and Kuala Lumpur development assess the challenges associated with urban growth that lie ahead and identify the key area of policy that been required. It ends by highlighting the growing needs for vibrant urban research agenda foradequate future policy.

Keywords: Comparative study, Urban Growth, Developing Countries, Phnom Penh and Kuala Lumpur

INTRODUCTION

Towards achieving the United Nation`sMillennium Development Goals (MDGs), the international community agreement on the target towards eradication of extreme poverty and hunger, will highly depend on how well the government of developing countries manage their cities. Cities are concrete representation of what a society has been, what it is, what it strives to be. This represents a significant evolution of the spatial distribution of land use development in the developing countries that occurred over the past years. Urban growth can be defined as the rate of growth of an urban population. It is different from urbanization which is the process where there is an increase in proportion of a population living in places classified as urban: the movement from a rural to urban area. In recent decades, many developing countries have experienced urban growth rates considered as unmanageable and have therefore tried to slow down the growth of urban areas, mainly through adopting policies aimed at reducing rural-urban migration. However, these policies have generally been accepted as ineffective even by country like China where considerable efforts have been made in their implementation (United Nation, 2011).

　　Kuala Lumpur is the capital as well as the largest city in Malaysia. It has evolved around a single nucleus at the confluence of the Sungai Gombak and Sungai Kelang. The city covers an

area of 243km^2 (94sqmi) and has an estimated population of 1.6 million as of 2012. Greater Kuala Lumpur also known as the KelangValley is an urban agglomeration of 5.7 million as of 2010.It is among the fastest growing metropolitan regions in the country, in terms of population and economy. In 1972 Kuala Lumpur achieved its city status and was established as the Federal Territory in 1974, resulting in the extension of territory from 93 square kilometres to 243 square kilometres. Then, in the late 1990's the Federal Government decided to establish a new Administrative Capital in Putrajaya. The City Hall of Kuala Lumpur is the local authority for the administration and development as stipulated by Local Government Act 1976 (Act 171). It develops and provides infrastructure and amenities for the betterment of urban living environment. It aims to be the regional hub for financial and economic activities as well as being the centre of the national tourism industry. The future of Kuala Lumpur is depending on the City Hall and the stakeholders. The annual growth rate of 4.2 % makes the city among the fastest growing region with the targeted of 2.2 million population by 2020 (Dasimah et al 2009).

Parallel to Kuala Lumpur, Phnom Penh is also the capital and largest city for Royal Government of Cambodia located in the south-central region of this country and is fully surrounded by the *Kandal* Province. Phnom Penh city specifically located at the confluence of the *Tonlé Sap, Mekong,* and *Bassac* rivers that formed right in front of the Royal Palace. These rivers provide potential freshwater and river ecosystems as important resources for sustainable environment conditions, nature's beauty and a prosperous culture for the people of Phnom Penh City from the past to the present. Phnom Penh functioned as a commercial, political and cultural hub of the country. However, Phnom Penh is a flood plain area for Cambodia even though is situated at 11.89 meters (39 ft) above the river. The city covers an area of 678.46 square kilometres (262 sq mi), with 11,401 hectares (28,172 acres) in the municipality and 26,106 hectares (64,509 acres) of roads. The agricultural land and natural lakes covers 80% of Phnom Penh while the build-up areas coveronly 20% from the total acreage (Refer Table 1).

Table 1.0: *Capital cities profile*

ITEMS	MALAYSIA	KUALA LUMPUR	CAMBODIA	PHNOM PENH
Area	329,847km^2 (127,350 sq mi)	243 km^2 (94 sq mi)	181,035 km^2	678.46 Km2
Population	29,179,952	1,493,000	14,952,665	1,519,000
Migration rate	-0.37 migrant(s) /1,000 population	1.1%	-0.33 migrant(s)/1,000 population	2%
Level of urbanization %	2.4% annual rate of change	100	3.2% annual rate of change	-
GDP %	4.4 (2012)		6.5% (2012)	
Land use proportion	Build up Un-built	80 % - Build up area 20 % - un-built area	Build up Un-built	80% - agriculture and natural lakes 20 % - urban areas

Sources: *CIA World Fact book*

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This study attempts to discuss the gaps of urban development growth between two capital cities of developing countries in Southeast Asia which is Kuala Lumpur in Malaysia and Phnom Penh in Royal Kingdom of Cambodia.

THE EXPANDING IN GOVERNANCE PERSPECTIVES

As for Kuala Lumpur, the local administration is carried out by Kuala Lumpur City Hall, an agency under the Federal Territories Ministry of Malaysia. The City Hall is responsible for public health and sanitation, waste removal and management, town planning, environmental protection and building control, social and economic development, as well as general maintenance functions of urban infrastructure. Executive power lies with the mayor in the city hall, who is appointed for three years by the Federal Territories Minister. This system of appointing the mayor has been in place ever since the local government elections were suspended in 1970. Kuala Lumpur's eleven districts serve as administrative subdivisions under the authority. Two districts lie in the west areSegambut and LembahPantai, while Kepong,Batu and WangsaMaju are in the north, (Setiawangsa,Titiwangsa and Cheras) are situated in the east, Seputeh and Bandar TunRazakare in the south area and lastly Bukit Bintangis in the centre of Kuala Lumpur.

On the other hand, Phnom Penh is a municipality for an area of 678.46 square kilometres (261.95 sq mi) with a government status equal that of Cambodian provinces. The municipality is divided into nine administrative divisions called *Khans* (districts). These *Khans* (district) namely*Dangkao*, *Meanchey*, *Porsenchey*, *SenSok* and *RusseiKeo* are considered as the outskirts of the city. All *Khans* are under the governance of the Phnom Penh Municipality. The Khans are further subdivided into 76 *Sangkats* (communes), and 637 *Kroms*. Phnom Penh municipality is governed by the Governor who acts as the top executive of the city as well as overseeing the Municipal Military Police, Municipal Police and Bureau of Urban Affairs. Under the Governor are the First vice Governor and five Vice Governors. The Chief of Cabinet, who holds the same status as the Vice Governors, heads the Cabinet consisting of eight Deputy Chiefs who in turn are in charge of the 27 Administrative Departments. Each*Khan*(districts) has a head Chief of its own (Flower, 2012).

Figure 2.0: *Administrative Areas in Phnom Penh and Kuala Lumpur*

Phnom Penh		Kuala Lumpur	
Subdivision	District/Commune	Subdivision	District
1201 Chamkar Mon	12 communes	West	2 districts
1202 DounPenh	11 communes	North	2 districts
1203 PrampirMeakkara	8 communes	East	3 districts
1204 TuolKouk	10 communes	South	2 districts
		Centre	1 district

Source: *Ministry of Land Management & Urban Planning and Construction (www.mlmupc.gov.kh) and Kuala Lumpur Local Plan.*

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THE ECONOMIC AND POPULATION GROWTH

Many global businesses are starting their strategies from a city perspective, instead of a country perspective. With their rapid growth and potentials for development, these cities in emerging markets such as Malaysia, are becoming increasingly attractive to investors. In the Economist Intelligence Unit's (EIU) reports, "*Hot Spots: Benchmarking global city competitiveness*", Kuala Lumpur which is the Malaysia's capital city, is ranked against 120 other cities as the second most competitive global city in Southeast Asia. Kuala Lumpur begins as a tin-mining district, and has grown to become one of the most vibrant and dynamic cities in the world. Today, Kuala Lumpur has developed and expanded into Greater Kuala Lumpur (GKL). Its status, attractive business environment, growing middle-class, well-developed infrastructure and skilled workforce make this city an obvious choice for the hundreds of multinational companies (MNCs) that have heeded Kuala Lumpur's call to investors (KLC, 2012).

In Cambodia market economy, the government promotes private sector investment and production, establishes the rules for conducting market-based on transactions, encourages development of human capital and creates any economic and social infrastructure that cannot be supplied by a competitive market. In such economies, national plans set their medium-term objectives, policies and expenditure priorities; identify areas of market failures requiring government intervention; and ensure that the agreed priorities are reached through actual policy implementation. To achieve these objectives through a participatory process, governments need to develop and implement their own plans; identify required adjustments resulting from fundamental changes in macroeconomic conditions; and monitor the impact of public investment in collaboration with all stakeholders. Sectors such as trade, industry and transport have been liberalized and privatized. The Government of Cambodia established after the elections held in May 1993 under the United Nations Transitional Authority in Cambodia has officially adopted a liberal economic policy under a free market. However, unlike other centrally planned economies, the legacy of internal conflict, civil strife and isolation from the international community over the past three decades continue to affect Cambodia's economic and social foundations.

Phnom Penh scenario shows that the urban spaces are increasingly important gateway to global and regional economic networks, crucial in facilitating transnational trade and investment. Correspondingly, the nation's urban areas have experienced rapid demographic growth, increasing at an average rate of 4.34 percent annually from 2000 to 2010 (World Bank 2012).Indeed, in Phnom Penh it is predicted that the population will be more than double between 2005 and 2025 to 2.91 million people (UNHABITAT 2008: 167); the urban poverty will account for a significant proportion of this growth. If the government does not act now to implement policies that promote social and economic inclusion, there could be grave impacts for the nation's future social and economic stability (Flower, 2012).

Table 3.0: *Patterns of population changes in the urban centre in Cambodia*

OLD PATTERN	Established pre-colonial and then colonial centres, such as *Kampong Cham, Pousat* and *Kampong Chhnang* or *Kampot*, and all other old market towns have decreased in relat size.
NEW PATTERN	The fast growing "newcomers" are all linked with foreign economic influences, or have global local linkages; above all, *Siem-Reap*, the prime tourist destination of the country, has exploded in the size due to tourism-related investment, *Sihanoukville*, the Port city, has

	grown because of foreign trade; and formerly unknown urban centers, such as *MongkolBorei*, *Poipet*, and *Suong* for this reason selected as one of the case study centres- have grown rapidly because of the border trade (ADB, 2005)

NATURE ON URBAN GROWTH PROCESS

Urban can be defined through administrative criteria, population size/density, economic functions, or infrastructure and services. Many cities in Asia, including Cambodia and Malaysia, have been definedaccordingly. Urbanization and urban growth are phenomena of increasing concern to both planners and policy makers since trends and patterns of urbanization have wide ranging implications on socio-economic development. During the past decades, both the scale and pattern of urban growth in Malaysia were transformed continuously and increasing rapidly. Like many other countries, the growth of the urban population in Malaysia and Cambodia were much more rapid than the population growth in rural areas. The extent of growth in some urban centres was not just seen within their legal boundaries but had led to a spill over of the population into their peripheries. This situation can be attributed to two factors: firstly, the availability of vast employment opportunities which drew migrants from the rural areas to settle in these peripheries and, secondly, the population moving away from the densely populated urban core centres to settle in the outer limits of their urban boundaries (Sabariah et al 2006).

Phases of Urban Growth

After the retreat of the Khmer Rouge in 1979, Cambodia's capital city Phnom Penh began to receive an influx of migrants from rural areas who settled in the city's mushrooming informal settlements. It is estimated that squatters and other urban poor communities constitute 20% (or about 250,000 people) of the current population of Phnom Penh. The inhabitants of these settlements - located in every conceivable empty space, from courtyards and rooftops, to the sides of railway tracks, riverbanks and swamps - lack secure tenure or basic services. To help address this situation and the increasing urban poverty, a number of initiatives were launched. As a follow-up to an earlier successful squatter support project phase, the Phnom Penh Urban Poverty Reduction Project started in November 2000. This phase of the project institutionalizes the lessons learned from working with urban communities in the past and strengthens the capacity of the Municipality of Phnom Penh to effectively implement their Poverty Reduction Strategy. The central aim of the project is to improve urban governance for poverty reduction and to upgrade slums by targeting 150,000 beneficiaries. However, the Royal Government of Cambodia needs to look at the changes of land use (ranging from forest to farming, farm to urban and unclear property rights and legal enforcement). In addition, the focus should be on effective implementation of land law, sub-decrees and land strategies.

On the other hand, Urban evolution and town distribution in Malaya was primarily a consequence of theBritish intervention in mainland Malaya around the 1850s. Hamzah Sendut (1965)attributes the spread of urbanization in Malaya to the colonization of Malaya by theBritish. He identifies the following four phases of development: In the first phase, duringthe development of Malacca, the urban population was limited to the hinterland of a fewsmall towns, which were the primary political centers of the Malays. In this phase,Malacca was well-known in the East (Sandhu, 1961). The second phase of urban growthinvolved the expansion and

development of Malacca City as a commercial center, alongwith the foundation of Penang (1786) and Singapore (1819). These cities were a product

of a Eurocentric economy, in which Southeast Asian products were exported to Westernmarkets. In the third phase, the British intervention in the Malayan mainland in the 1870scoincided with the development of tin-mining industries in the states of Perak andSelangor. Kuala Lumpur, altogether with Ipoh, Seremban, and other towns considerably expanded withthe growth of the tin-mining industry, while Penang and Singapore became importanttrade centers for the British, in order for them to export tin ore and rubber products. Inthe fourth phase, Malaya gained independence from Britain and the formers nationaleconomy developed.

According to the Kuala Lumpur Municipal Council Annual Report 1959, KualaLumpur was founded in 1859 (Hamzah Sendut, 1972). With the economic boom and therise in the price of tin between 1882 and 1884, the expansion of Kuala Lumpur that beganin 1862, started to accelerate. Consequently, Kuala Lumpur population reached 18,000 in1891 (Hamzah Sendut, 1972). The city's population continued to rapidly rise; population in Kuala Lumpur increased from 46,718 in 1911 to

1,627,172 in 2010. Today, Kuala Lumpur is among the rapidly growing city in Malaysia with Penang and Selangor, these rapid urban growth however has cause an increase in urban population that occurred several decades ago which has severely degraded theurban environment and has created socioeconomic and political issues. This increase hasimpeded the government and its agencies in their endeavor to deliver efficient services tourban inhabitants, who differ in terms of socio-economic statuses and political leanings.

Development Pattern
Development pattern for both cities differs from each other where Kuala Lumpur has successfully provided all the basic need of the community and now focusing on achieving what community wants. Development pattern in Kuala Lumpur in nature are Brownfield development where development projects are being conducted to replace or upgraded the existing use on land because development in Kuala Lumpur is considered as compact compared to Phnom Penh that has more spaces to be developed. While, the development project in Cambodia focuses on institutionalizing past lessons, a wide range of activities to improve access to basic services and generate economic activities for the poor, including a vocational and apprenticeship programs, have also been implemented. These activities have helped strengthen communities to negotiate for security of tenure. In May 2003, there was a breakthrough in government policy when the Prime Minister committed to upgrade 100 slum settlements per year over the next 5 years. This has brought all the stakeholders to work together towards in-situ upgrading.

At the policy level, issues of land, governance and urban poverty were the main focus, and four land-sharing projects were supported by applying various tools and methods. To support this, a Land Management Manual and Land and Housing Policy Guidelines were prepared. Joint pilot projects were implemented with the Municipal SEILA, to further strengthen pro-poor decentralized governance in an urban context. The Urban Poverty Reduction Strategy was revised and updated to link with the national urban poverty reduction strategy and the Cambodian Millennium Development Goals. A "City without Slums Strategy" was formulated to address key issues for pro-poor investment.Slum upgrading has become an accepted norm in Phnom Penh. Dialogues and partnership amongst communities, NGOs, and the Municipality

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have been strengthened. Lessons learned have been consolidated into policy documents. The Urban Poverty Reduction Unit has become fully operational at the Municipality, Khan (districts) and Sanghats (wards) levels and officials have been trained to respond positively to requests from communities. Community Action Planning has further enhanced communities' ability to articulate their problems and plan their settlements.

Strategies and Policies Related
In Cambodia, one of the readily available definitions of urban came as a result of the reclassification of urban areas in 2004 by the Ministry of Planning, which defines urban areas according to three criteria: i) population density exceeds 200 per km2, ii) male employment in agriculture below 50 per cent, and iii) total population above 2,000 (NIS 2004).The Cambodian capital city, Phnom Penh, has nowadays a population of 1.3 million people. The city is growing annually by 4 per cent compared to the country's overall 2.5 per cent growth level. In the last five years the city's population has increased by 300 000 people, indicating real population pressures (Crosbie, 2004). The capital city is the political and economic centre of the country and has attracted numbers of people from rural areas (De Ville & Westfall, 2001). The rural-urban migration, together with the tenuous economy and weak infrastructure, has rendered the city to unable to provide adequate housing and services for the growing population. Thus, over 30 per cent of the city's population is living without adequate housing and basic services (Ulla Heinonen, 2008).

A national strategic development plan for Cambodia (2009-2013) stated that good governance for this country should integrate strategies comprises of enhancement of agriculture sector, further rehabilitation and construction of physical, infrastructure, development of building and human resources and private sector development improvement of private sector and employment generation.Given its limited human resources, experience and funding, Cambodia did not possess a regional or provincial planning system prior to 1993. In order to establish a basic strategy for social and economic reconstruction and development for the medium term, the Government, however, formulated the social and economic reconstruction plan from 1994 to 1995. The objectives of this plan were to strengthen macroeconomic management, rehabilitate physical infrastructure, develop human resources and promote reintegration into the regional and the world economy. Socio-economic Development Plans were prepared by the Government of Cambodia as the first mid-term strategic papers for poverty reduction through equitable economic growth. The First Socioeconomic Development Plan recognized that projects and programmed which were explicitly aimed at poverty reduction and human resources developments through targeting of specific social groups were essential.

ISSUES AND CHALLENGES OF URBAN GROWTH PROCESS
Most countries have urbanized significantly since the 1950s and are projected to continue this process through the middle of the 21st century – the percentage of the world's population living in urban areas has, in fact, just passed the 50 per cent mark. In developing countries, this increasing share of total population living in cities is similar to the historic patterns of Europe and North America, with increasing urbanization accompanying rising levels of GDP. The key differences lie in the faster pace of urban growth in developing countries in this period and the

higher absolute levels of urban population. The latter is reflected both in the concentration of people living in mega-cities (urban agglomerations over 10 million residents) and the increasing numbers of medium-sized cities up to 3 million. Looking at global trends more closely, about 90 per cent of the new demand resulting from rapid urbanization between now and 2030 will occur in 48 countries, with most of it being in East and South Asia. Within the developing regions in Asia the major urban challenges are, and will continue to be:

Massive Migration From Rural To Urban Area
In Kuala Lumpur, the increasing number of people living in cities is not only the major concern but more so it is the fact that since the 1970s, most of the population accretion has been occurring at the major urban centres of the Kuala Lumpur-Klang Valley conurbation, George Town, and Johor Bahru. In Selangor, for instance, which is the State where the capital city of Kuala Lumpur is located, the proportion of the population who were urban residents had increased from 55.3 per cent in 1990 to 92.7 per cent in 2005. This means that the big cities are growing bigger at a much faster rate. Several factors explained this phenomenon of mega city developments in Malaysia. The year 1970 marks an important policy watershed with the government actively encouraging the movement of *bumiputras* ("sons of the soils") towards the urban centres to be absorbed into urban-based employment in order to eliminate the economic differentiation between the Malays and the non-Malays. Consequently, out of the total Malay population in the Kuala Lumpur core area, 57 per cent were migrants from the rural areas. In addition to this New Economic Policy, the 1970s represent the onset of greater globalisation in the country.

Up to the late 1960s, import-substitution industrialisation was the basis for the development of the manufacturing sector with links to the outside world largely determined by virtue of its colonial status. Although import-substitution efforts resulted in much of the industrial growth during this period especially between 1963 and 1968, industrial growth between 1968 and 1971, however, was due more to domestic demand expansion. By then, substitution also appeared to have been exhausted. It was only logical as such that the industrial development strategy be realigned towards export orientation. This had two substantial effects. First, the country saw the influx of foreign investment projects from more than 45 countries increased ten-fold between 1981 and 1990. Secondly, the export-oriented industrialisation was accompanied by the development of Free Trade Zones and other incentives that consciously or unconsciously favoured the major urban nodes. Consequently, about two-thirds of all approved foreign investment projects were located in the three major urban nodes of Kuala Lumpur, Johor Bahru and Penang. Thus, an inevitable directional bias in the migration stream towards the major urban nodes marked the rapid industrialisation in the country.

In most developing countries, urbanization has been spreading rapidly since theearly twentieth century. An examination of data on the urbanization of Malaysia has alsorevealed that the number of people living in urban areas (i.e., areas with 10,000 people or more) has increased from 250,790 in 1911 to 13,725,609 in 2000. These figuresindicate that in a span of 90 years (1911-2000), approximately 13.7 million people becameurban residents and the expansion of urban areas, throughout the country, contributedsignificantly to the statistical increase in the number of cities with populations of 10,000 ormore. Since the formation of Malaysia in 1963, theproportion of its urban population increased to 28.4 percent in 1970 and 62.0 percent in2000.

Between 1970 and 2000, the urban population increased drastically by 386.9percent or 10.8 million. Urban statistics show that two-thirds of Malaysia's population livein urban areas. The proportion of Malaysia's urban population is higher than that of allother Southeast Asian countries, except Singapore.

Rapid increasing for housing, basic infrastructure and services
Recently, all cities in Cambodia are expanding rapidly, often before infrastructure and services can be put in place. Consequently, the number of squatter settlement has increased. In addition, most town districts are growing very rapidly. To accommodate urbanization of this magnitude, the country requires key policies and management structures to be put in place in the every year future. Although urbanization in Cambodia has brought development, the government has been unable to minimize negative impacts of expansion because of limited human, technical and financial resources, leading to growing incidences of urban deficiencies and problems. These include disputes regarding land tenure, lack of urban infrastructure and services, degraded living environment –including contaminated water-as a consequence of solid waste, air pollution, congestion and urban sprawl development; and the creation of slum and squatter settlements. These negatives impacts of urbanization, coupled with increases in land prices and limited financial resources for investment, present alarming difficulties for managing urban development and growth. Understanding these challenges, the Government has introduced and pilot tested decentralization and de-concentration policies. These policies give local authorities responsibility for managing urban growth and accommodating the growing demand for urban infrastructure and services from the population. Assistance and intervention from the central government is minimal, with local authorities receiving only technical assistant to help formulate and implement their plans in an efficient and effective manner. Compared to Phnom Penh city in Cambodia, Kuala Lumpur has successfully provided the basic need of community such as Housing and Infrastructure. Currently Kuala Lumpur strives to achieve the goal of Sustainable development while solving some urban development issues that arise from previous development such as urban sprawl, traffic congestion, and public transportation services. Kuala Lumpur managed to solve slum settlement issues by providing low-cost housing to the population.

CONCLUSION
Urban growth is one of tremendous phenomena happened in all countries in the world. The growth process is depend on the main factor of migration rate and physical development which been injected to the countries in expanding their legacy. The comparative study between two capital cities in South East Asia will give an opportunity for both countries to enhance their urban development growth. It can be said that Phnom Penh urban development growth pattern follow similar characteristic with Kuala Lumpur despite its different demographic background. Phnom Penh can use Kuala Lumpur as their guidance in managing their urban growth while Kuala Lumpur needs to improve and strengthen its urban development growth strategy. Urban development growth in Cambodia was in early stage and there are few aspects need to be concerned in facilitate a sustainable development in the future. In the near future, this issues studied might produce a huge impact on capital city urban development in developing countries in South East Asia. In developing countries, slums are the most visible manifestation of urban

poverty and of the failure of urban development and housing policies. Addressing the slum challenge in Phnom Penh, will partly entail in-situ upgrading, focusing on improving water and sanitation, as well as improving the supply of adequate but affordable housing for low-income households. To achieve the latter, serious attention has to be paid to increasing the supply of affordable land, especially for the poor. Meanwhile, Kuala Lumpur needsto strategize the existing developments to accommodating a lively life in the cities. The impact of environmental pollutions, urban disaster and traffic congestion will be serious issues if the responsible authority neglects to handle it properly. Fortunately, the strategies and policies gazette in Kuala Lumpur Local plan have been outlined wisely and government also have a good financial planning in facing this kind of problems expected to be happened in the next decades. In conclusion, each countryhas their own strength and potential, with concerning to this they will strategize a good development plan to route their urban growth as well.

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THE CONCEPT OF INSTITUTIONAL COLABORATION FOR SUSTAINABLE SPACE IN SOUTH TANGERANG CITY

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ABSTRACT

The Zones of Research Center for Science and Technology (ZRCST), as part of the green open space (RTH) in South Tangerang city, has a probability of development of RTH in disproportionate way with spatial regulation in Indonesia. Growth of South Tangerang city has potential to reducing RTH land that threatens sustainability. However, the local government does not have the authority to manage, because the area is legally under the authority of the Central Government. This paper presents the idea to build collaboration between the Central Government and the Government of South Tangerang city in developing the green space. Where RTH is sustainable environmental parameters and serve to keep the micro climate of the city. These idea formulated by conceptual approaches.

Key Words: institutional, collaborative, open space

INTRODUCTION

South Tangerang is a result of the expansion of a new city district of Tangerang. South Tangerang city borders the city of Jakarta. Housing Development in South Tangerang city is high. In South Tangerang City, there are three large-scale housing developers such as Bumi Serpong Damai (BSD), Bintaro and Alam Sutera. In South Tangerang City has 128 residential areas. Number of residential area is located in the Ciputat 45 areas, Pamulang 40 areas, Ciputat Timur 32 areas, Pondok Aren 25 areas, Serpong 18 area, North Serpong 14 areas and Setu 9 areas.

South Tangerang City land use for housing most of the area of 9941.41 hectares or 67.54% of the 14 719 ha. Field area of 2794.41 hectares or 18.99%. Use the smallest land for quarrying sand and covering 15.27 hectares or 0.1%. The data shows residential land uses nearly 70% of the entire South Tangerang City. Under the law No. 26 of 2007 on the set of spatial green open spaces of a city area of at least 30% of the area of the city. South Tangerang city should maintain open space green area of 4415.7 ha

But the demand for housing require extensive land area. It's hard to follow the rules laid down by law. Residential development to change the existing lake. Data shows there are 4 lakes

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that have changed the function of the *Situ Bungur, Situ Antak, Situ rompong,* and *Situ Legoso* (Bapeda South Tangerang City; 2011). Lake is the place to naturally absorb rainwater. The loss of the lake will be flooded when the rains. When you see the spatial planning policy of South Tangerang city then plans to use housing policy to include nearly the entire area (see Figure 1, yellow and orange colors indicate plans residential use)
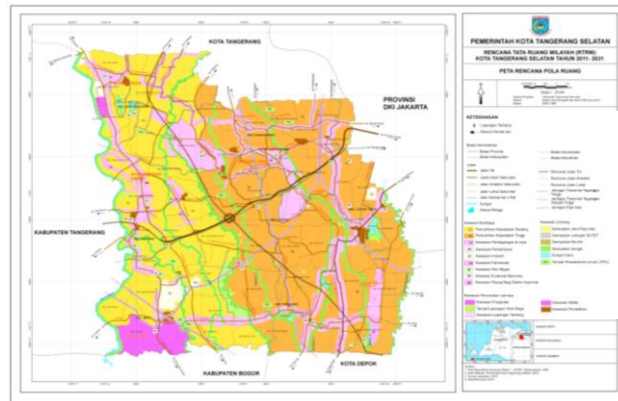
Figure 1: *Land Use Plans South Tangerang City Year 2031*
(Source : Bapeda South Tangerang City;2011)

Puspiptek area is the zone to the center of knowledge and research. Puspiptek region has an area of 460 hectares (Masterplan Puspiptek; 2011). Puspiptek area managed by the Ministry of Research and Technology. Puspiptek region has a large open green space. Large green open space in Puspiptek covering 44% of the total land area. South Tangerang City Government can keep the green open space in the area PUSPIPTEK. Cooperation strategy with clear institutional. Although green open space area PUSPIPTEK provided only 1% of the 30% provision but have significant value in a city system. South Tangerang city government should do the patterns of institutional collaboration with the ministry of research and technology to keep the green open spaces.The research objectives is to make The concept of institutional collaboration. The research methods is review of the literature that considered to have a relation with institutional collaboration and Open Space

SOUTH TANGERANG CITY CONDITION

South Tangerang city located in the eastern province of Banten is at coordinates 106 ˚ 38 '- 106 ˚ 47' East Longitude and 06 ˚ 13'30 "- 06 ˚ 22'30" south latitude and administratively consists of 7 (seven) districts , 49 (forty nine) villages and 5 (five) villages with an area of 147.19 km2 or 14 719 ha.
South Tangerang city boundaries are as follows:
- The north of Jakarta and Tangerang City
- The eastern borders Jakarta and Depok City
- The south district borders the City of Bogor and Depok
-The west is bordered by Tangerang Regency, see figure 2

Figure 2: *South Tangerang City Area*

Districts with the greatest area is Pondok Aren with an area 2,988 hectares or 20.30% of the total area of South Tangerang City, while the smallest is the Setu district with an area of 1,480 hectares or 10.06%.According to BPS Tangerang regency, South Tangerang city population was 1,076,302 in 2008, an increase of 2.37% of the total in 2007. Sex population of 543 671 men, while the women's 532 631 people. Sex ratio is equal to 102.69, which indicates that the number of males slightly more than females.With an area of 147.19 km2, the population density reaches 7,312 people/km2 City. Density was highest in the District of Ciputat Timur 10 642people/km2 while the lowest density in the district Setu is 3,903 people/km2 .High population density due to an increasing population trend over time, which is not only caused by natural increase, but also can not be separated from the tendency influx of migrants caused by the attraction of South Tangerang city as many new estates were built in areas directly adjacent to the city of Jakarta. South Tangerang city to overflow population from the city of Jakarta. This will cause the need for space

PUSPIPTEK CONDITION

Puspiptek area managed by the ministry of research and technology while Puspiptek area locations are in South Tangerang. Puspiptek region there are 30 laboratories and research centers are essential to the advancement of technology in Indonesia. Puspiptek development concept is basically a science park area development.A Science park is an organization managed by specialiced profesionals, whose main aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge based institution (Seong;2008). Several locations of the Science Park which can be found in Asia, which can be seen in Table 2 below:

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Table 2: *Lokasi Science Park di Asia*
(Source: *Puspiptek, 2009***)**

No	Country	Name Science Park
1.	China	1. Anshan High & New Technology Industrial Development Zone
		2. Baoji Science & Technology Industrial Park
		3. Baotou Rare Earth Science & Technology Industrial Park
		4. Boading Science & Technology Industrial Park
		5. Beijing Economic Technological Development Area
		6. Caohejing Hi-tech Park
		7. Changchun Science & Technology Industrial Park
		8. Changsha Science & Technology Industrial Park
		9. Changzhou Electronic Technology Industrial Park
		10. China-Singapore Suzhou Industrial Park
		11. Chongqing Hi-tech Development Zone
		12. Chongqing High Technology Entrepreneur Center
		13. Dalian Hi-Tech Industrial Zone
		14. Daqing Science & Technology Industrial Park
		15. Erlang Hi-Tech Industrial Park
		16. Fengtai Science & Technology Garden of Beijing
		17. Fuoshan National Hi-Tech Development Zone
		18. Fuzhou Science & Technology Industrial Park
		19. Goldennox Hi-Tech Industrial Park
		20. Guangzhou International Bio-island
		21. Guangzhou Science City
		22. Haidian (Zhongguancun) Science Park
		23. Hainan Science & Technology Industrial Park
		24. Hangzhou Hi-Tech Industry Development Zone
		25. Harbin Science & Technology Industrial Park
		26. Hefei Science & Technology Industrial Park
		27. Hepin Technology and Trade Development Zone
		28. Hongqiao Economic & Technical Development Zone
		29. International Hi-Tech Park for China's Textile Industry
		30. Jiangmen Science & Technology Industrial Park
		31. Lanzhou Science & Technology Industrial Park
		32. Luohe Science & Technology Industrial Park
		33. Luoyang Science & Technology Industrial Park
		34. Minhang Economic & Technological Development Zone
		35. Nanning New and Hi-tech Industrial Development Zone
		36. National Health Technology Park
		37. Nantong Hi-Tech Park
		38. Ningbo Sci-Tech Par
		39. Peking University Science Park
		40. Qingdao Hi-tech Industrial Park
		41. Qinhuangdao Economic & Technologic Development Zone
		42. Qiaonan Economic & Technologic Development Zone
		43. Science Park Xi'an Jiaotong University
		44. ShangDi Information Industry Base
		45. Shanghai Golden Bridge
		46. Shanghai (Z.J) Hi-tech Park
		47. Shanghai Jingan scientific and trade area
		48. Shanghai Lujiazui Finance&Trade Zone
		49. Shanghai Songjiang Industrial Zone

No	Country	Name Science Park
		50. Shanghai CITIC-Power Zhanjiang Industrial Park
		51. Shantou Science & Technology Industrial Park
		52. Shenyang Science & Technology Industrial Park
		53. Shenzhen Science & Technology Industrial Park
		54. Shenzen Hi-Tech Industrial Park
		55. Shijiazhuang Science & Technology Industrial Park
		56. Suzhou Science & Technology Industrial Park
		57. Tianjin University
		58. Tianjin Tanggu Haiyang Hi-Tech Development Zone
		59. Weinan High Technology Industry Development Area
		60. Wuhu Economic & Technical Development Zone
		61. Xiamen Science & Technology Industrial Park
		62. Xi'an National Hi-Tech Industrial Development Zone
		63. Xiangfan Science & Technology Industrial Park
		64. Xiangtan Science & Technology Industrial Park
		65. Xianyang New and High-Tech Development Zone
		66. Xiaoshan Economic and Technological Development Zone
		67. Xin Qing Science and Technology Industrial Park
		68. Yantai Economic and Technological Development Zone
		69. Yingkou Economic and Technological Development Zone
		70. Zhangjiang Hi-tech Park
		71. Zhenghou Science & Technology Industrial Park
		72. Zhongkai Science & Technology Industrial Park
		73. Zhuhai BaiJiao Science and Technology Industrial Park
		74. Zhuhai National Hi-Tech Development Industrial Zone
		75. Zhuzhou Science & Technology Industrial Park
		76. Zhongguancun Science Park
		77. Zhongshan Industry and Development
		78. Zhongshan Torch Technology Industrial Park
2.	Hong Kong	1. Hong Kong Science and Technology Park
		2. Nansha Information Technology Park
3.	Japan	1. Amagasaki Research Incubation Center
		2. Biwoka Science Park
		3. Chusei Hokubu Science City
		4. Fukuoka Soft Research Park
		5. Harima Science Garden City
		6. Hiroshima Central Science Park
		7. Ishikawa Science Park
		8. Kanagawa Science Park
		9. Kansai Science City
		10. Kazusa Akademia Park Chiba City
		11. Keihana Science City
		12. Kitakyushu Science and Research Park
		13. Kobe Science Park
		14. Kumamoto Technopolis
		15. Kumure Research Park
		16. Kyoto Research Park
		17. North Chusei Scientific City
		18. Mie Hi-Tech Park
		19. Nagahama Science Park
		20. Onaridia Science Park
		21. Suzuka Sanroku Research Park

No	Country	Name Science Park
		22. Tsukuba Science City
		23. Yokosuka Research Park
4.	South Korea	1. Ansan Technopark
		2. Daedaok Science Town
		3. Kyongbuk Technopark
		4. Songdo Technopark
		5. Taiduk Science Town
5.	Taiwan	1. Hsinchu Scinece-Based Industrail Park
		2. Tainan Science Based Industrial Park
		3. Taiwan science parks and industrial zones
6.	Malaysia	1. Johor Technology Park
		2. Kulim Hi-Tech Park
		3. Selangor Science Park
		4. Subang Hi-Tech Industrial Park
		5. Technology Park Malaysia
7.	Indonesia	1. Puspiptek Science Park
8.	Singapore	1. Singapore Science Park
9.	Philippines	1. Laguna Technopark
		2. Science City of Munoz
		3. Science Park of the Philippines
10.	Thailand	1. Thailand Science Park
11.	Vietnam	1. Hanoi Hi-Tech Park
		2. Hao Lac Hi-Tech Park
12.	India	1. Kerala Technopark
		2. Gujarat Science City
		3. Nanguneri Hi-tech Park
		4. Science City Calcuta
13.	Iran	1. Isfahan Science and Technology Town
		2. Pardis Technology Park
14.	Israel	1. Hi-Tech Park of the Ben-Gurion University
		2. Kiryat Weizmann Science Park
		3. The Manhat Technology Park in Jerusalem
		4. MATAM/Haifa Industrial Park for R&D Centres
		5. Migdal Ha'emek Science Park
15.	Lebanon	1. Berytech Pole Technologique
16.	Saudi Arabia	1. King Abdulaziz City for Science & Technology

Definitions of science park or technopolis development vary considerably around the world and significant variations occur event within individual countries. The essential concept however is one of spasial development where the interface of research with commerce and industry is encouraged for the better exploitation of advange technology.Puspiptek region in Indonesia is different from the existing science park other countries. PUSPIPTEK a gathering of 3 Officials area, consisting of BATAN, LIPI, BPPT, and KLH. PUSPIPTEK facility in activities designed to meet the institution, and realize the vision of becoming the Science and Technology Park. Amenities in PUSPIPTEK i.e:

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a. Management Center

PUSPIPTEK center facility management to perform the function intended area management and dissemination and coordination of science and technology center . In the center of this management consists of :

☐ BuildingTechnology Management Center

☐ Convention Center (Widya Graha Bakti) , consisting of meeting rooms and convention a total capacity of 1000 people .

☐ coordinate space science and technology for the National Research Council (DRN) , the Ministry of Research and Technology and IPI .

b . laboratory

c . Open laboratory

Open a research laboratory facilities and preservation , among others :

☐ Garden Province

☐ Garden Experiments

☐ Breeding Center

☐ seeded tropical fruit gardens

☐ Jatropha , oil palm and sorghum

d . Public facilities

Common facilities and support in areas such as:

☐ Housing services

☐ Guest House

☐ Meeting House

☐ Worship Facilities

☐ Sports Camp

☐ Health Facilities (Medical Center)

☐ Public Service Office (POS , Police , Telkom , PLN)

☐ Education Facility (kindergarten , elementary , junior high , high school and university)

☐ Helipad

INSTITUTIONAL COLLABORATION

Collaborative Planning was formulated in the mid-1980s in England. 'How far development plans were being implemented', an issue that arose in the political climate of 'high Thatcherism' (neo-liberalism), which was inherently hostile to the idea of planning and of 'managing' land and property markets to achieve wider economic, social and environmental goals (Thornley, 1991;Healey;2003). This challenge not only led the team to redefine the government's research question, to reflect the nature of a 'development plan' as it had evolved in the UK context. We also found ourselves exploring the complex relations between planning interventions, land and property development processes and distributive outcomes, so that any arguments we made for a strategic spatial planningapproach were robustly grounded (see Healey, 1991; Healey;2003).Collaborative planning and communicative planning theory are oftentreated as if the aim is to 'neutralize' power. This criticism derives from acritique of Habermas' .Power relations   become

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a dominant mode of governancediscourse in developed democratic societies, reflecting a levelling of powerrelations.

South Tangerang city is managed by the South Tangerang mayor. There are regional differences in management institutions. Necessary cooperation between the ministry of research and technology to the South Tangerang mayor. Existence Puspiptek region not only assist in the provision of green open spaces of South Tangerang City but can help the needs of the development of his research for the advancement of South Tangerang city.Puspiptek area managed by different institutions with the city area. The concept of institutional collaboration should be emphasized in Indonesia for joint development. South Tangerang city has a need for a green open space in accordance with the law while Puspiptek region requires a regional infrastructure to ease the interaction with the region outside the region. This ease of interaction can be provided by the City of Tangerang through infrastructure development to the surrounding area in the city of South Tangerang.For the case of South Tangerang resolving the collaborative planning approach is very appropriate. Form solution with collaborating institutions. Collaboration done for resolving more action implementation.

CONCLUSIONS AND RECOMMENDATIONS

In South Tangerang city needs land for housing is very high. The provisions of Law No. 26 of 2007 on spatial planning that sets 30% of the city should be a green open space will be difficult to be provided. While Puspiptek area which is an area of science park has areas of green open space which can be provided for the needs of the South Tangerang City. 1% area of green open space of the area PUSPIPTEK for South Tangerang City is widely significant. The reason is because the green open space in the area PUSPIPTEK definitely be retained for research needs. South Tangerang mayor should cooperate with the ministry of research and technology to maintain the green space the 1%. Suggestions concept formulated in this institutional collaboration can be seen in figure 2 below:

Figure 3: *The Concept Of Institutional Collaboration*
(**Source:** *Ina Helena Agustina;2013*)
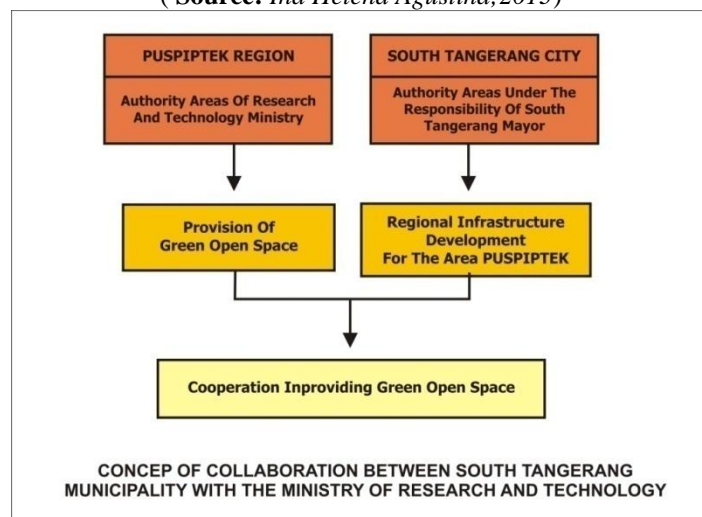
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REVIEW ON BANDUNG TRANSPORTATIONPLANPOLICY

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ABSTRACT

Transportation service is a derive demand, it means a demand what it need to reach a specific aim. Cause of that, the basic step on the transportation system planning should follow these steps: Formulation of goals and objectives, Data collection, Analytical methods, Forecasting, Formulation of alternative plans, Evaluation and Implementation. The Sustainability of a transportation system has to consider: The transportation existing condition, financial condition, people opinion, government policies, social-economics constraint, and the physical condition of that area. By comparative method between Bandung transportation problems and the strategic plan of the Bandung transportation system which has written on the RTRW (Masterplan) of Bandung 2010-2030, can be concluded that transportation system plan policy has not clear as an explicit plan which it need by the city of Bandung, cause it is not fully following the basic steps of transportation system planning and did not looked to the constraint of the transportation system plan. We recomendate to compose the transportation system plan as derivate, which more clear the criteria and target aims.

Key Words: Derived demand, basic steps of the plan, plan constrain, transportation system

INTRODUCTION

Transportation is moving passanger/ goods/ services from a place to another. Transportation will work if the 4 elements of transportation (Morlok, 1978) are fulfill, these are: thing or goods (including passanger), medium, vehicle and operating plan. When one of these element is not fulfill, the transportation system will not work well. Transportation is the derived demand, it means a demand which needed to reach a certain aim. So that if the demand of transportation is not fulfill, thus the true aim of transportation services can not be reached.

The factors which have to attend from the goods is the location factor or place where is the thing or goods, or passanger exist, or in other word the distribution of that goods location, the goods characteristic etc, number of goods and time when that goods are needed. The factor of medium is the choice of medium, it can be air, water (sea, river, lake), and/ or land (roadway, railway), the availability of networking system of the medium, etc. For the vehicle factor have to attend the vehicle availability, appropriateness, capacity, capability and the technology which will be used. Meanwhile the factor of operating plan will cover operating schedule, institutional, supporting rule etc.

Thus to plan a transportation system for city, village or region, has to do by planning that four elements in an integrated and harmonize system.

OBJECTIVES

If that factors is the basic steps which have to attend and done for transportation planning, so how about the Bandung transportation plan? Is the transportation planning system has already exist on the master plan of kota Bandung could answer the transportation problem of Bandung? Is it has followed the procedure of urban transportation plan? If not yet, what the local government has to do?

BASIC THEORY

To reach integration and harmonism on the urban transportation system, the basic steps which need to be carried out(John Black, 1989), are:

1. *Formulation of goals and objectives:*
   The formulation of goals can be done by identified the transportation problem, as like is the problem only arround the traffic problem?, or have shift to transportation problem?, as like constrain on goods flow, highly transportation cost etc. Including in the formulation of that aim is the determining of the planning scope which will be reached, its only "problem solving" that is shorterm solution, or goes to "planning" as longterm strategic solution.

2. *Data collection:*
   After problem identification and goals formulation, the next step is data collection. In the urban area, there is internal flow and external flow,there is flow what we call as basic access and non basic access, there is freight transport and also passanger transport vehiches have different characteristic. Passanger transport influenced by travel behaviorof the citizen in transportation. Appropriate to the result of the problem identification, thus for the problem relate to the traffic problem offcourse have to collect data relate to the traffic data problem, it is: traffic volume, speed, traffic density or traffic flow. If the transportation problem relate to the certain transportation data as like origin and destination flow, transportation infrastructure data etc.

3. *Analytical methods:*
   In the analyticalprocess, important to understand the relationship among Activity system, Flow system and Transportation system. By sintesys the problem identification and goals formulation which have done, can be determined what is the problem will be finished by plan on Activity System (Spatial) or by plan on Flow System or direct to the Transportation System.

   Also in this analytical process, it need to determine the performance indicator what will use as measuring tools for this plan. There are three performance indicators which commonly used, there are: *Traffic, Mobility* and *Accessibility*. Accessibility is the ultimate performance indicator of the transportation system, it relate with the supply and demand of transportation system.

   The other else for this analyisis is the presence of public transport and private transport, what can be a special characteristic on the compeet between supply – demand side for the

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transportation system in the urban area. The choice of government side on demand side will colloring the implementation of the transportationplan what will be choosen.

4. *Forecasting:*
   Forecasting or prediction such as apart of analytical process. Appropriate with the spirit of planning which oriented toward to the future, so that forecasting is a crucial point, what is the next transportation planning has to do or not.
   Forecasting is showing also the consequence, even the plan has been done or not for the final condition, or the goals of the planning, or what transportation planning system will be proposed.

5. *Formulation of alternative plans:*
   In the formulation of alternative plans, all choices suitable with the result of analysis and forecasting which has been done, as like, did the problem will be finished by the planning on Activity System (spatial), or by movement planning (flow) or direct to the Transportation System. The choice on the basic concept of transportation system which its suitable with the forecasting result of the supply – demand of transportation, that is "Predict and Provide" or "Predict and Prevent". In the *Predict and Provide* approach, the choice of transportation plan aimed to "fullfill" all of the result analysis and the forecast of the supply – demand transportation. Meanwhile on the *Predict and Prevent* approach, the choice of the planning action more than to the effort on "controlling" the *supply – demand*oftransportation in order to decrease the worst condition what will be occurred appropriate with the result analysis and forecast, or obstruct the accelaration of what bad condition will be occured.

6. *Evaluation:*
   Evaluation here means as *Decision Making Process*, from numbers of planning alternatives then choose one of the best planning action, by consider the good and bad condition, benefit-cost, big-small impact from that choosen planning. Evaluation better to be done in quantitative and qualitative manner, thus all factors, it is right tangible or intangible can be valued in good and right track.

7. *Implementation:*
   After get one or more plans, the next action is to execute that choosen plan. Include in this implementation process is organizing, staging or schedulling till funding that planning.

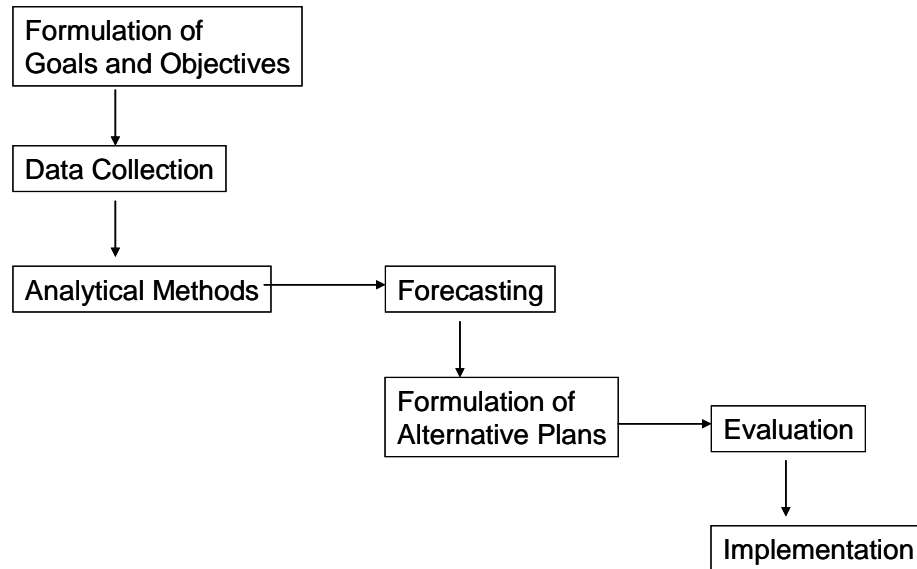The above describes can be drawn as on the Diagram 1, as below:

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┌─────────────────────┐
│ Formulation of      │
│ Goals and Objectives│
└─────────────────────┘
          │
          ▼
┌──────────────────┐
│ Data Collection  │
└──────────────────┘
          │
          ▼
┌──────────────────┐      ┌──────────────┐
│ Analytical Methods├─────▶│ Forecasting  │
└──────────────────┘      └──────────────┘
                                  │
                                  ▼
                        ┌──────────────────┐      ┌──────────────┐
                        │ Formulation of   ├─────▶│ Evaluation   │
                        │ Alternative Plans│      └──────────────┘
                        └──────────────────┘              │
                                                          ▼
                                                ┌──────────────────┐
                                                │ Implementation   │
                                                └──────────────────┘
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Diagram 1: *Transportation Planning System Approach*

As shown on Diagram 1, the steps to formulate alternatives as apart of *Formulation of Alternatives Plans.*

The Alternatives formulation of plan is a more artlyprocess. It caused many judgment factors must be done by a planner, otherwise experience and knowledge factor mostly influencing to the result of planning.

The alternatives formulation of plan is the most crucial stage on producing a good plan, it caused in this stage will be raised smart ideas. Without brightly ideas in this stage, it has been guest that result of plan nothing special, so that is clear the soul of innovative by a planner is very necessary.

Although in this stage more colourful by judgment and art, it doesn't means the stage of alternatives formulation on planning can't be analysis systematically. In other word perhaps one of a push thing be reached a good result of a transportation plan is to formulate alternative plan by systematically and analytically.

An important thing which need considered by a transportation planner in formulate an alternative of planning is to identified the existing barriers, especially the barriers which will influencing the result of planning. The barriers of planning which have to attend are:

a. Existing condition of Transportation
   Existing condition need to be benchmarked, cause its uncommonly if the existing infrastructure of transportationis none, and all start newly.

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b. Financial condition
   Need to remember that transportation planning usually use unslightly fund at implementation. Considering the present condition of fund and at the future in order to choice the right planning alternative.

c. Citizen Opinion
   In the information era and openess like present day, citizen opinion is one of important input to formulate the plan of transportation sistem. The resulting plan wished appropriate with citizen aspiration.

e. Government Policy
   The government policy offcourse relate to the policy of transportation sistem, right for existing policy eventhough for the next government policy will be implemented in the future. The aim is no clash of interests from prediction aspect view or other aspect view.

e. Socio Economic Obstacles
   The result of transportation planning wished not to emerge chaos on social and economic, but it can give equal chance for all group of citizen to use that transportation system.

f. Physical Condition of the Area
   Commonly physical factor of the study area is the mainly obstacle for planner. Physical factor which it means covering: Physic Fisiografic, geografic, topografic, hydrology, basic soil etc.

METHODOLOGY

This review did firstly by comparing between the issue of the Bandung transportation problem and the planning of transportation which have written on the masterplan (RTRW)of kota Bandung 2010 – 2030. It did to look, is the transportation plan which described on the master plan of kota Bandung could answer the transportation problem of kota Bandung?.Then, by valuing all of the planning alternatives has described on the masterplan documen through the basic steps of the urban transportation system as have mentioned on the basic theory at the abobe Secondly, base on the above result review we can propose the update plan appropriated with the main barrier of planning facing by kota Bandung.

ANALYSIS AND RESULTS

The revise result of the Masterplan of Kota Bandung 2010 – 2030 has mention that the goals of spatial planning of Kota Bandung is to realize a city with spatial efficientcy, sustainability and oriented toward to public utility with branding kota Bandung ''Bermartabat''. To describe that goalsbreakdown to the objectives as the target of Spatial Planning which will have to reach as below:

1. Supporting to the function and role of development of the city by services the citizen of the Cekungan Bandung area;
2. Preparing transportation system and city infrastructure by quality and standart equal with metropolitan standart;
3. Harmonizing the conservation area and functional are equal fairly and sustainable, and preparing green area minimum 30% of city area;
4. Preserved area and buildings become as city identity
5. Preparing save, comfort and effectively of the public space
6. Control spatial form in clearly and directly.

The masterplan of Kota Bandung 2010 – 2030, has mentioned clearly that one of the strategyc issue to be faced by kota Bandung is Transportation system which valuing have not yet optimal performance and sustainable, thus to reach good transportation system and sustainable, has to prepare transportation system with clearly, directly, safely, comfort and reachable so that the performance of socio-economic of the citizen will better, more productive and sustainable. But that masterplan also mention the basic reason which transportation system become as strategyc issue, that is:

- Low road level of service occurred by decreasing road space effective and roadside disturbance to the traffic, its cause many activities use road space, and problem inrelationship terminal and pedestrian facilities.
- Mass public transport services has not yet optimal, people level of accessibility to the transportation infrastructure relative badly.
- Using two wheel motorcycle approximately 60% and indanger to accident.
- Road wide network ratio at 2005 only 2,32 % from the total wide area (ideal ratio for a city, about 15% to 20%).
- Cikuda Pateuh Railstation and Andir not yet functionality as feeder for road network.
- Road performance not appropriate with the function.
- Road network form not yet in good shape (road dimention, *bottle neck*).
- Inequilibrium on demand growth (vehicle ±11% per annum) and supply growth (road network only ± 2% per annum).
- Less parking infrastructure for commercial, education and health care area.
- Less quality and quantity for pedestrian facilities.

Basic reason what we have mentioned offcourse will colouring the plan and policies on the transportation planning concept which have mentioned in that masterplan. If that basic reason can be said as problem identification of the transportation for kota Bandung 2010 – 2030, offcourse not yet answering the other strategyc issues what have described also in the masterplan of kota Bandung 2010-2030, it covering:

a. Capacity and capability of the city
b. Role and function of the city
c. Spatial structure of the city
d. Urban form (spatial shape of the city)
e. Area and building preservation

    f.   Public space
    g.   Public facilities
    h.   Transportation system
    i.   Infrastructure supply
    j.   Development control

If it relate to the direction of development to improve the quality of live of Kota Bandung as like:
- Air and water quality appropriate with standart
- Enough water quantity and quality (watershade, low well water, deep well water)
- Efectively and economicaly sewerage instalation
- Safety, comfort, productive and sustainable of city space
- Save, efficient, comfortable, reachable, and environmental friendly of the transportation system
- Environmental infrastructure appropriate with minimum technical standart level of services.
- Good recognize disasters

That problem identification can be compared with transportation system policies which have mentioned in the masterplan of kota Bandung 2010 – 2030, as like improvement the quality of services of the transportation infrastructure, base on integrated and controlling public transport. Urban transportation system policies covering policy on preparing infrastructure, public transport, investment and institution, with strategy such as below:
- Maintain and clearly again the function and hierarchy of the road system
- Improving road network capacity by roadway development and widening, traffic management, and disappear roadside disturbances.
- Developing transportation system base on public transport and prioritize to develope integrated mass public transport system.
- Preparing appropriate parking facilities and integrated with activities centre.
- Developing innercity terminal system, and terminal on the border, coordinated with arround local government.
- Improving services capacity of Husein Satranegara Airport till the replacement airport has been developed and funcioned.
- Develope capacity of railway services, especially reactivated link which has already track.
- Opening investment opportunities and partnership of private and public sector on preparing transportation infrastructures; and
- Creating "city transportation board" to supervise and controlling transportation system of the city.

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CONCLUSION

1. The Transportation system will work in goodshape if the four elements of transportation is fullfilled, such as: goods, medium, vehicle, and operation plan.
2. Transportation services is*derived demand*, it means a demand what it need to reach a specific aim
3. The Basic steps on the planning of city transportation system, is: *Formulation of goals and objectives, Data collection, Analytical methods, Forecasting, Formulation of alternative plans, Evaluation dan Implementation.*
4. The main barriers of plan has to attend for kota Bandung is: Existing transportation condition, Financial condition, Government policy,Physical condition of the local area especially on the landuse overlapping.
5. The plan of transportation system in the masterplan of kota Bandung 2010-2030 not yet showing clearly the transportation planning which needed by kota Bandung, it caused not composed by following full steps of the basic transportation system plan, thus it is not yet answer the real issue of the transportation problem.

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