Approaching Islamic Architectural Heritage Studies through Problem Based Learning

Assistant Professor Dr. Fadzidah Abdullah
Department of Architecture, International Islamic University Malaysia

Abstract

This paper deals with an innovation of approaching Islamic Architectural Heritage through an educational learning approach named Problem Based Learning (PBL). The Department of Architecture (DoA), in Kulliyyah of Architecture and Environmental Design (KAED), of International Islamic University Malaysia (IIUM), has implemented the so-called Problem Based Learning in one of its core courses, named AAR 3201: Heritage Studies. Although PBL has not been thoroughly discussed in numerous forums, seminar, and conferences of architectural education throughout the world, yet this approach has always been unconsciously implemented in learning and teaching of architecture. Similarly in DoA, this theoretical educational approach was not discussed when the process of developing the course was carried out, yet recent analysis on the course shows the existence of PBL essence in learning and teaching process of the course. The implementation of PBL educational approach has proven to effectively develop students’ independency in learning, and enhance their proficiency in understanding Islamic Architectural Heritage. Students are also found to appreciate Islamic Architectural Heritage better through this PBL educational approach as compared to learning the subject in traditional way of listening to lectures. This course of Islamic Architectural Heritage requires students to initially choose old buildings with heritage quality to be measured and researched for the purpose of producing comprehensive documentation of the buildings and their history, in the format of report, construction drawings, presentation drawings, architectural model, miniature artefact, digital multimedia documents etc. After buildings are identified, students are expected to have field work of measuring the buildings, and researching for historical and constructional background of the buildings. Based on students and lecturers feedback, the experiential and practical qualities of PBL approach implemented in this Heritage Studies course have effectively thought students to gather knowledge of Islamic Architectural Heritage better than theoretically teaching them via lectures in history of architecture classes. Indeed, more and more theoretical courses in architectural education should be implemented using Problem Based Learning educational approach to enhance students’ competencies in becoming talented architects.

Keywords: Islamic Architectural Heritage, Architectural Education, Problem Based Learning, Heritage Studies.
Introduction

Teaching Architectural history is important to the development of architectural knowledge and skills among students. Students learn about “a repertoire of possibilities that they can then translate or react against in their own architecture” (Samuel, 2001). Recent research has shown that the interest on architectural history has been decreasing as more and more architects focus on the development of digital technology to supplement their knowledge and skills. Concern about the meaning of cultural heritage and identity is also decreasing as architecture discipline faces with the complex and dynamic situation: processes of globalisation, rapid urbanisation, population growth, environmental and technological developments (Orbasli, et. al, 2008). However, this development has taken its toll as more and more graduate architects are becoming ignorant of their charge of delivering cultural and environmental sustainable architecture. Graduates are excused for not having enough historical knowledge to be applied to their current design innovation, resulting on superficial concept of integrating technology and building design.

Architectural students are currently having problems of enacting learning of architectural history. It is important to make learning architectural history interesting as it serves as reference for formative influence on the role of architects (Cunningham, 1979). As such, the department has designed a course named Heritage Studies, where learning architectural history is made more interesting by engaging students in the process of searching for knowledge. This course does not eliminate history classes in architectural programme, but it is considered an additional course for students to enhance their knowledge particularly on Islamic architectural heritage. As many architectural schools throughout the globe try to look for specialisation and diversities (Stansfield-Smith, et. al., 1999), architectural programme in IIUM emphasize on the niche of Islamic architecture, thus making Islamic architectural heritage an important subsidiary to the existing courses.

This article describes the distinctive procedures and process of learning students undergo in the course of Heritage Studies, ranging from planning to presentation stages. Among the objectives of this paper is to investigate if PBL could be identified as the theoretical pedagogical approach applied to the course; to examine the essences of PBL within the course outline; and to study if PBL components has made learning history more interesting as compared to the traditional teaching methods of lectures delivery. As a result, this study will eventually frame the course to a theoretical approach that answer criticism that architectural programme always lack of theoretical framework (Fadzidah Abdullah, et. al, 2009; De Graaff, et. al., 1997). As the current development of pedagogies actually challenge and address weaknesses in current practice of architectural education particularly in design studio (McCLean, 2008), PBL may gives sense of belonging to this course whilst developing students’ independent learner culture. This would support IIUM to expedite the undergoing paradigm shift, converting the role of architectural schools “from a provider of teaching to a producer of learning” (McCLean, 2008), which would be relevant to tomorrow’s architectural profession.
The Design of Heritage Studies Course

AAR 3201: Heritage Studies (HS) is a required course to be taken by third year architectural students in IIUM. This course is a studio based, where students spend most of their time working collaboratively among group members to produce documentations of research and buildings surveyed. It introduces students to the general conservation and restoration techniques, and exposes students to the practice of measuring and surveying heritage buildings, especially those which located in the Muslim world. The use of information technology and latest building surveying techniques will also be incorporated in the teachings (DoA, 2004).

Among the objectives of this heritage studies course are: to nurture students’ awareness on the importance and meanings of preserving architectural heritage; to develop students’ skill in building surveying and building documentations, for the purpose of conservation and preservation; to exposes students on multi-dimensional experience of managing their learning affairs: and expands students capabilities in running national and international correspondence (DoA, 2004).

The course is conducted during semester 3, commonly called the summer semester in architectural schools located at the northern hemisphere of the globe. Being the shortest semester of seven (7) weeks only, it requires students to undergo rigorous and intensive study period to complete the course. HS is a 3 credit hours course, but as studio or lab based subject, it has minimum of six (12) contact hours per week in which students spend their time working collaboratively in design studio.

This course requires students to complete several pre-requisite courses such as architectural graphics, history and theory of architecture, building constructions, and design studios; so that the prior knowledge gained form the pre-requisite course would enable students to work independently.

Instructional Strategies of Heritage Studies

There are four major (4) instructional stages involved in this course: planning; fieldwork; studio-work; and presentation and exhibition. In each specified stage, students involves in numerous activities which requires them to comprehensively apply ranges of skills: planning skill, management skill, leadership skill, collaborative skill, technical skill, research skill, architectural skills and etc. In the whole process, academic staffs play the role of facilitators only: guiding students on what and how to do things properly. Minimum support provided by academic staff of the architectural department is mainly on logistic aspects, such as on sponsorships, correspondence with international and national bodies, organising workshop, and managing exhibition day.

Planning stages is conducted prior to the commencement of the semester, up to a year. First, several academic members of the department conduct a one day workshop to inform students on the process and procedures involved in undertakings of HS
course. Due to the large number of students enrol in this class and the challenge of HS
course, a minimum of six (6) academic staff are assigned to monitor students progress,
with one of them is appointed as a coordinator of HS. Students are encouraged to visit
heritage lab in the department to see what the former students have done to complete
the course. In fact, some students go extra miles to visit archives of measured drawings
done by other universities in Malaysia to check on precedent studies of HS.

Second, students are divided into manageable groups of their choices. Each group is
assigned to do research, to identify building of Islamic heritage values to be studied and
documented. They are to present their prior research findings to the department as to
justify the needs of conducting building surveys upon the identified buildings at the
specified locations. Different group would choose different building and location. Upon
identifying buildings and their locations, students are to establish networks with
correspondent parties to get permission on conducting their field work of building
survey. Often, students choose buildings located overseas to be measured, thus requires
them to look for sponsorship as travelling abroad incur high financial support. Besides
looking for sponsorship, students also conduct other activities to generate money, such
as selling their art works to the public and organising food festivals where they could
sell foods and collect funds.

Fieldwork stage is the most challenging part of this course which is also done
before the semester begins. It usually takes two (2) weeks for students to complete their
field work tasks: conducting building survey and researching for historical and
constructional background of the identified buildings. Both activities are done for the
purpose of producing comprehensive documentation of the buildings and their history,
in the format of report, construction drawings, presentation drawings, architectural
model, miniature artefact, digital multimedia documents etc.

During the fieldwork, each group is further divided into sub-groups to carry out
specific tasks assigned. The number of sub-groups is determined by appointed students’
coordinator from each group, depending on the needs and strategies of the group.
Different sub-group is to work on different tasks and has its own appointed leader.
Here, academic staffs usually keep distant supervision and observation as to ensure
students work independently for the success of their HS course. Table 1 shows the
normal sub-divisions of group with the tasks assigned during and after the field work.
The sub-groups are measurement group, research group, cataloguing group, and
multimedia group.

Upon completion of field work stage, students are to get back to campus to begin
their studio-work. In the studio, students would maintain their sub-group divisions to
collaboratively work until the end of the semester. There are cases where students
exchange their tasks based on preference and communal agreement. This practice is
allowed but not encouraged, as long as the group could successfully carry out their
tasks. Again, the role of academic staffs is still as facilitators, providing direction in
case students have difficulty in managing their tasks. For assessment purposes and to
keep students on tracks, facilitators do check students’ progress from time to time.
Table 1: Normal sub-divisions of group with the tasks assigned to each.

<table>
<thead>
<tr>
<th>Sub-group</th>
<th>Task Assigned</th>
<th>Product expected</th>
<th>Tools and equipments required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement group</td>
<td>• Building survey</td>
<td>Complete documentation of drawings and model</td>
<td>Measuring devices, Digital cameras, Video camera, Voice recorders, Computer Laboratory, Heritage Laboratory, Model Making Laboratory.</td>
</tr>
<tr>
<td></td>
<td>• Producing as built drawings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Producing presentation drawings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Producing physical model of the surveyed building</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research group</td>
<td>• Undertaking research on constructional aspects of building</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Interviews experts on relevant subject</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Collecting archival material</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Documenting process of HS course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cataloguing Group</td>
<td>• Taking and collecting relevant photograph.</td>
<td>archival materials</td>
<td>Cement Plaster, Drawings tools, Drawing Boards, Digital cameras, Video camera, Computers and its peripherals, Photography Laboratory, Heritage Laboratory.</td>
</tr>
<tr>
<td></td>
<td>• Producing copies of artefacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cataloguing copies of artefact, photos, documents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multimedia Group</td>
<td>• Building virtual model of building.</td>
<td>Comprehensive multimedia presentation and archival CDs</td>
<td>Computers and its peripherals, Software: AutoCAD series or Max, Adobe Photoshop, etc., 3D image scanner, Photography Laboratory, Heritage Laboratory.</td>
</tr>
<tr>
<td></td>
<td>• Producing multimedia presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Document all relevant materials into digital form</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Studio work for HS course has certain distinction from normal design studio for architectural project. Rather than developing design innovation, students in this particular course work on “virtual reconstruction” of heritage building, to the extent that all the documents and materials produced should enable the real reconstruction of the heritage buildings studied. As specified by the course outline, students are expected to spend their time in studio at least for 12 hours per weeks. However, since most of the students do not have other course during the short semester, they regard the studio as their second home in which most of their learning, social, and living activities take place. Visit to the studio by facilitators often shows that the studio has been occupied days and nights throughout the semester.

The final stage of presentation and exhibition dictates the major assessment method implemented in this HS course. Students are to have a presentation day, where they verbally, textually, and graphically present their works. The practice of presentation at the end of the semester is common for any studio based course. Thus, this stage is effortlessly done by students as they have been trained to do so since their embankment to tertiary educational system.

There is additional assessment methods applied to this course which is not common to architectural educational approach: self and peer assessments. Students are given assessment sheets to do self assessment and giving feedbacks on the whole process of
their learning in this particular course. They are also interviewed by facilitators to conduct peer assessment. Although the weightage of both self and peer assessments are very low as compared to weightage given to facilitators’ assessment, they are still significant in determining the levels of students’ accomplishment in developing independency in learning. The opportunities to have self and peer assessment are to encourage them be responsible in the learning process of themselves and their peer students.

Exhibition is done in dual events: the first is during presentation day and the second is during exhibition days. Students usually go beyond expectation in preparing their exhibition days as they take the pride and credits of their efforts undertaking HS course. Numerous parties who indirectly involve in the HS projects are invited to see the exhibition; the invited parties are among sponsors, owners of buildings, local authorities of areas of studies, local and overseas counterparts and etc. There are occasions where royal families who own heritage buildings, which are the subjects of study, came to celebrate students’ success during the exhibition days. In fact, this HS course is the last course students need to undertake prior to the conferment of their Bachelor of Science Degree, thus completing this course certifies them to graduate. Sometimes, students of the next cohort take the opportunities to raise funds during the exhibition days for their next year HS projects, as many visitors come to the exhibition. Indeed, exhibition of students work for HS course is a major annual event that the department takes not for granted as it serves as a promotion to architectural programme run in IIUM.

**Essence of PBL in Heritage Studies Course**

Traditionally, architectural design studio constitutes the apprentice based teaching, where academics play the role of knowledgeable masters or mentors in the design studio (Fadzidah Abdullah, 2006). The mentors in apprenticeship models promote “scaffolding and coaching knowledge, heuristic, and strategies, while students carry out authentic tasks” of design projects (Collins, Brown, & Newman, 1989; cited in Tam, 2000).

However, recent resonant constructivist idea demands that academic should serve as facilitators who show students how to reflect on their evolving knowledge and provide direction when the students are having difficulty in working on their design tasks (Fadzidah Abdullah, 2006). Thus, architectural education has also transformed gradually from being a teacher-centred method to a student-centred method. Some scholars in architecture discipline label this change of paradigm as Project-based Learning (De Graaff & Cowdroy, 1997; Kolmos, 2003; Webster, 2002), because of its emphasis on design projects. The change from the use of the word “teaching” to “learning” emphasises the importance of students’ own roles and participation in the design process (Fadzidah Abdullah, 2006).

As Project-based Learning (PrBL) is more institutionally situated on engineering based disciplines, it actually belongs to the diversities of PBL. Mechanism of PrBL conforms to “problem solving curricula,” one of PBL diversities described by Ross
Problem-solving curricula gives students specific training via development of experiences for solving problems (Fadzidah Abdullah, 2006). The role of the problem here is “appropriately described as puzzles or exercises to problems” (Ross, 1997). Engineering and architectural design education, implemented in engineering laboratory and design studio scenarios, commonly uses problem-solving forms of PBL in their curricula, where it is usually implemented within a specific time period of a course. In considering Problem Solving, Hubka (2003) notes that design problems require routine innovative solutions based on well-developed knowledge and existing systems, because they demand both artistic behaviour and science application.

On the contrary, although HS course uses studio to situate learning process, the course adapts Problem-oriented Curricula, where problems are used as selection criteria for content. Here, problem can be presented both in PBL and in the traditional teaching methods, but not necessarily involve problem-solving techniques (Ross, 1997). Students’ accumulation of knowledge is basically limited to the selected contents related to the problem presented in the educational programme.

During learning process in HS course, students accumulate knowledge through research and experience. By mean of research, the research sub-group selects and gathers “contents,” which students eventually arrange in systematic organisation to produce a comprehensive, manageable, accessible, and readable format. Simultaneously, all the three (3) other sub-groups (measurement group, cataloguing group, and multimedia group) use their experience during planning, fieldwork, and studio stages to reproduce design. Schon (1985; 1987; 1991) terms this process as “experiential learning” or “learning by doing,” which confer as part of constructivist idea.

Table 2 shows the checklist of PBL learning process, as compared to pedagogical activities that have been implemented in HS course.

<table>
<thead>
<tr>
<th>PBL Mechanism as specified by Koschmann (1994)</th>
<th>PBL Mechanism as specified by Barrow (1992)</th>
<th>Methods Implemented in HS course</th>
</tr>
</thead>
<tbody>
<tr>
<td>problem formulation</td>
<td>problem presentation</td>
<td>Yes</td>
</tr>
<tr>
<td>self-directed learning</td>
<td>discussion in collaborative teams</td>
<td>Yes</td>
</tr>
<tr>
<td>problem re-examination</td>
<td>proposed solution presentation</td>
<td>Yes</td>
</tr>
<tr>
<td>reflection</td>
<td>reflection</td>
<td>Yes</td>
</tr>
<tr>
<td>abstraction.</td>
<td>outcome.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Generally, in the domain of HS course, students utilise both peer learning and self-directed learning techniques in their quest and accumulation of knowledge. Peer learning that is promoted by PBL pedagogical approach reduces students’ burden of learning too much information within too little time. Especially with the scale of assignment they have in HS course, it is almost impossible for a single student to grasp all the content and knowledge relevant to his or her task by studying and searching for
knowledge individually. As such, the sharing of responsibility for finding and constructing knowledge among students in a PBL environment enables students to avoid overload.

Meanwhile, self-directed learning technique applied in HS course empowers students with the task of learning by identifying learning issues, creating their own learning objectives and criteria, and assessing how well their learning has progressed (Henderson, 2003). A collaborative and interactive learning environment enables students to be motivated to control their own learning process and outcomes by exploring the unknown and managing their “learning pace and strategy” with maximum flexibility (Kwan, 2000). Students also learn to identify their own learning needs and appropriate use of available resources (Boud and Felletti, 1997).

Both PBL learning techniques used in HS course are not really taught to students, but being indirectly orchestrated by facilitators. The skill is eventually developed by students as they engage deeply into cooperative, active, and effective learning process. It is through active research within self-directed learning, and debate within peer learning groups that the students’ existing subject knowledge base is integrated and expanded, “leading to deeper subject understanding and developing their ability to apply that knowledge in potential real life situation” (Hutchings, 2003).

Practically, most of learning mechanisms existed in PBL has been used in the instructional strategies of HS course. It has developed students skills; such as communication, critical reasoning, a logical and analytical approach to problems, reasoned decision making, and self evaluation. These wide-ranging competencies prepare students for their long life learning process upon graduation, responding to the demand of the changing nature of architectural profession and discipline.

**Conclusion**

Based on feedback given by students on the assessment sheets distributed to them at the end of the semester, the majority of students are satisfied with their learning endeavor in HS course. Beside successfully acquire the specified knowledge of the HS course, students collectively agree that the conduct of HS course serves the similar benefit as what PBL provides, as the followings:

- The conduct of HS course trains them to manage time effectively.
- HS course trains them to manage tasks properly and be responsible on group success.
- HS course develops their skill on working collaboratively with other students, although it is very challenging.
- HS course encourages them to be more considerate and helpful to each other.
- HS course challenge students credibility and leadership quality, but it is “a serious fun.”
- HS course develops closer bonding among students.
- HS course lets them to be more sensitive on their learning subject and appreciate Islamic building heritage better.
• HS course is “entertaining, adventurous, and educational.

Nevertheless, there is one particular student comments that the department has been burdening students with tasks they are not supposed to do during the term of HS course. Upon investigation, it surfaces that this student receives the most negative comments from his peers as he does not participate on most of the activities required to complete the HS course. Thus, his opinion is considered irrelevant as it just serves as his bogus justification of his lacking of team-work spirit.

Another student comments that the department should have updated booklet as guideline for students on what and how to do things in HS. The department is considering revising the current booklet as prior knowledge is essential in HS course, as well as in some versions of PBL.

There are other limitations that actually hamper the smooth-running of HS course. These so-called hiccups observed by facilitators. Some students do not share the commitment to complete tasks, thus leading to transfer of task from one hand to another. This has caused delays and difficulties on students’ behalf. The department also does not have the best and latest tools available to ease students’ tasks. Computer and printing facilities provided are not 100 percent competence to carryout heavy graphics, thus leading students to resolve the problems by using rented facilities that cost them excessively.

Throughout the eleven years of experience in conducting this HS course, the department has encountered numerous challenges. However, the objectives of the course have been accomplished as sought after. The course does not only let students to accumulate knowledge on Islamic building heritage, but also develop various skills for them to effortlessly explore the professional world later. Thus, PBL mechanisms have been successfully adapted to suit architectural disciplines, both in normal design studio and Heritage studies course. More and more architectural subjects should be delivered via PBL mechanisms as it proves to improve and expedite students learning process.

References


