

Critical Analysis of Criteria-Based Assessment and Grading in Architecture Education (Universiti Kebangsaan Malaysia as Case Study)

¹Badiosadat Hassanpour, ^{1,2}Nangkula Utaberta and ²Azami Zaharim

¹Department of Architecture,

²Centre for Engineering Education Research, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia

Abstract: Education is a contiguous and consecutive process. Thereby learning skills and knowledge in any context, requires strong and powerful academic basis. To reach this target, evaluation as a means to recognize student's learning level and making decisions for further educating steps seems essential. All the Educational systems have sort of official examination, assessment or grading policy to measure student's learning stage. In the typical policy, students are told clearly about the proposed assessment program and the relative weightings of the various components and they are given timely and helpful feedback after each assessment stage. Internationally, in these decades, universities and educators have become increasingly committed to making assessment and grading more effective in promoting student learning. Appraisal methods and grading systems in studio based educating systems, such as architecture, more than other majors and fields needs attention and scrutiny. Because transmitting the success amount of solving ill-defined problems in design studios to grading symbols are more difficult than multiple choice tests and even open ended questions. The primary interest of this study is in grading methods that claim to be criteria-based. This study tries to hybrid the criteria based models to introduce a new appraisal method in evaluating architectural projects in universities, based on a review of the most common grading policies.

Key words: Architecture education, Criteria-Based assessment, grading

INTRODUCTION

Design process in architectural studios is based on some separate well defined projects during the semester and one final project at the end, which is ill defined and in larger scale. Students should finalize their project before deadline and present it in submission day with proper documentation. In this day they have a chance to see other student's project and get the comments from peers and experts and finally they would be assessed and get mark.

Nowadays Assessment is known as a part of education process and not as a distinct part. It has been recognized that assessment has an important impact on learning and that a proper alignment of the learning environments' objectives with assessment can have a significant impact on improving learning (Gibbs, 1999). In order to improve education and student learning, assessment must be appropriately designed and implemented. This is often a complicated task, especially in non-traditional academic disciplines, such as the teaching of professional skills, which demand experiential testing (Brown, 1999).

One significant problem is that the nature of the skills which students are expected to develop, such as complex skills of professional, are often difficult to assess by traditional methods. Compounding this problem is that

some of the forms of assessment which are arguably best designed to assess such skills (invention, solving problem, oral presentation and portfolios) are often subjective in nature, or suffer from problems of reliability and in this may lead to lose its fairness, at least in students believes.

Also the validity of any assessment is vitally important (Crooks *et al.*, 1996). Validity can be interpreted that the assessment measures what it purports to measure. This is an important consideration in relation to the design of skills assessments, as any useful measurement of proficiency in skills is likely to be complex and difficult. Such measurement often involves subjective assessment of performance in a context where there may legitimately be a multitude of more-or-less appropriate outcomes rather than one correct answer. Skills assessment is also complicated because it is needed to extract performance of a particular skill from the substantive context in which it is being performed. Naturally well designed assessment can play an important role in learning process. But not all forms of assessment will fulfill this function. Especially that there is no common understanding of what grading process is in architecture and what occurs by instructors are just their own experiences from what their own professors did before (Lawson, 1980). So we have to investigate about the past and current implemented grading systems

in architecture faculties to find the characteristics and attributes of idealistic grading systems.

Before studying architecture assessment models, we need to find an appropriate terminology and definition to use in our investigation of criteria based assessment and grading. Since different definitions of some terms related to the discussion are used differently in different countries and even within a single country, in different education sectors, finding an appropriate terminology to use in analysis of assessment and grading is essential (Sadler, 2005). For instance, 'assessment' in some contexts in the USA refers to the evaluation of a wide range of characteristics and processes relating to higher education institutions, including entry levels, attrition rates, student services, physical learning environments and student achievements (Sadler, 2005). In the UK, assessment can mean what students submit by way of project reports, written papers and the like as distinct from what they produce under examination conditions. Similarly, a 'grade' may refer to the classification of the level of a student's performance in an entire degree, the summary of achievement in a single degree component or the quality of a single piece of work a student submits in response to a specified task (Sadler, 2005).

Assessment in this article refers to the process of forming a judgment about the quality and extent of student's achievement or performance. Such judgments are mostly based on information obtained by requiring students to attempt specified tasks and submit their study to instructors or tutors for an appraisal of its quality.

Scoring and marking are used interchangeably in this article to refer to the processes of representing student achievements by numbers or symbols. Scoring includes assigning a number to reflect the quality of a student's response to an examination item. In most cases, scoring and marking apply to items and tasks rather than to overall achievement in a whole course (Sadler, 2005).

Grading refers to the evaluation of student achievement on a larger scale, either for a single major piece of work or for an entire course. Scores or marks often serve as the raw material for grade determinations, especially when they are aggregated and the result converted into a different symbolic representation of overall achievement (Sadler, 2005). Grading symbols may be letters (A, B, C, D, etc.) descriptive terms (such as Distinction, Honors, Credit, Pass, etc.), or numerals (such as 7, 6, ... 1).

Numerals are usually deemed to represent measurements and this provides a straightforward route to the calculation of Grade Point Averages (GPAs). The other symbols need a table of numerical equivalents.

Along with assessment systems and grading models, Students deserve to know which of their works and under what type of criteria will be assessed. This will enable students to shape their work appropriately during the design process and specifying the bases for grading help

to provide a rationale for grading judgments after they have been made and the results given back to the students.

In all studio based educating systems such as architecture studios, we can find different assessment method and grading models, which their principles may deduced from either the policy document or from accepted practice. The choice of possible types of assessment is extensive, but still is vague and complicated. It is obvious that in all grading models transforming students study to marks, grades or scores is very difficult because whenever the projects encoded with symbols the connection between course objectives and projects has broken and after that just the grade exists and can show the student's success amount. This has lead to do many efforts to define and implement some norms and criteria in appraisal methods. Despite the broad desirability of criteria-based grading in educating systems to implement these methods and ways, there are different conceptions of what it means in theory and practice. This has inhabited high-quality discourse, research and development of grading system in architecture education. This study, in order to shed light on criteria-based assessment model in architecture and some of the consequences, first will study the implemented project assessment models and their accommodate to characteristics of authentic assessment model. Then it will investigate in criteria-based grading models. And finally to investigate the consequence of implanting criteria based assessment will introduce the current criteria based assessment model in department of architecture of university Kebangsaan Malaysia as a case study and will analyze its feedback from students and instructors.

GENERAL RATIONALE FOR DESIGNING ASSESSMENT

Researchers in early of 1970 (Miller and Parlett, 1974) found that unexpectedly, what influenced students most was not the teaching but the assessment. Students described all aspects of their study-what they attended to, how much work they did and how they went about their studying to be completely dominated by the way they perceived the demands of the assessment system. Derek Rowntree stated that "if we wish to discover the truth about an educational system, we must first look to its assessment procedures" (Utaberta *et al.*, 2010). Also done researches show that architecture students are worry about their grades insofar as they won't attend in discussions if they think their comments will affect grades and with small negative comments or finding fault in their project they get disappointed and loose other statements and suggestions coming after (Utaberta *et al.*, 2010). In each University the assessment tasks used have been designed to test various professional skills. The degree to which these tools are valid is arguable. Reliability, alignment with learning objectives, integration and practicality are

issues that should be considered in the design of assessment (Canon and Newble, 2003).

Reliability: Reliable assessment is one that is seen to be objective, fairly administered and consistently marked (Canon and Newble, 2003). This means that an assessment task should be reproducible. This can be problematic in skills assessment, where a degree of subjectivity is often involved in the assessment process. Of course, subjectivity is also an issue in 'traditional' assessment forms, where different juries may award different grades for the same study. However, in assessing the appropriate demonstration of skills marker subjectivity is, perhaps, an even greater problem (Hewitt, 2007). For instance, if students are asked to show their ideas by developing and presenting a convincing process, individual jurors may be more or less convinced according to their own assumptions about oral presentation style, developing methods and the nature of professional product.

Alignment with learning objectives: An important pedagogical aim of assessment of skills is to assess student competency levels within those skills. In order to fulfill this objective, assessment must be aligned with the learning objective of mastering practical skills. Assessment must be carefully structured to avoid excessive emphasis on the technical abilities (Hewitt, 2007).

Integration: In the context of a problem-based curriculum, integrated assessment can operate as an effective tool for learning (Gijbels, 2005). A properly integrated assessment structure can also help create or maintain an authentic environment in which to practice relevant professional skills, thereby increasing the perceived relevance of the skills, (Gijbels, 2005) and assisting student retention of knowledge. If an experience seems real, the beneficial effects on students are likely to be several. Students have more interest and better motivated to learn. They pay more attention to and tend to learn things in a deeper level (Hewitt, 2007).

Practicality: Any assessment method must be practical: the costs, time and resource demands of the assessment must be such that they can be accommodated by the relevant institution and academic staff. Questions relevant to the issue of practicality are;

- Can the assessment results be accurately interpreted?
- Does the assessment scheme demand too much time?

There are different assessment method and grading models that designed and implemented by pioneer universities in architecture education and followed by

other universities around the world. Step by step by improving the definition of education and assessment these models have improved and changed. One of these systems is comparative method. In this appraisal model the student's projects will compare with each other. In fact jurors or the related tutors that are going to give marks in submission day, judge the quality of projects holistically then they rank the projects. Grades follow in descending form best project to worth one. Comparing students with each other is unfair, because students are from different backgrounds and talents (Utahberta *et al.*, 2010). Students deserve to be graded on the basis of the quality of their study alone, uncontaminated by reference to how other students in the studio perform on the same or equivalent tasks and without regard to each student's previous level of performance (Sadler, 2005).

In comparative system, the holistically attitude to the projects judgment leads to neglect Student's Creativity and abilities in some contexts. Students can't be aware of their weak and strong points and by this way and they can't do any effort to increase their marks and just lucky students who are skillful in graphic design are able to impact jurors for better grades. On the other hand making pair-wise comparisons just among small set of students submissions is possible. It will be very difficult in large amount of projects and students.

In recent years, universities have made explicit overtures towards criteria-based grading and reporting. Under these models, grades are required to evaluate student's achievement in fulfilling juror's expectations. These expectations can be explain in different form. We name these expectations as course objectives. The objectives are assumed to provide the basis for the criteria, but exactly what the criteria are is in essence left undefined (Sadler, 2005). These objectives should be known by instructors, students and especially external jurors. Because invited jurors have their certain tendency and assumed objectives that would be the base of their grading. This incoherency may lead to variant in given marks by different instructors and students dissatisfaction.

One of the implemented methods under this way is grading system base on marking forms. These grading criteria sheets (Montgomery, 2002) typically do not map in any simple way into course objectives. They are scoring rubrics which shows some tasks and their marks portion. These tasks outline some of the knowledge and skills students ideally should be able to exhibit by the end of the course. For instance, 3D model and executive details, boards, oral presentation as tasks and 5 mark for each of them. The given mark is based on the quality of presented documentation. This holistic method cannot explain about the expected details in each task and will leave the doors open to enter the personal opinions and subjective decisions in evaluation. An underlying

Table 1: Generic qualitative description for each grade (Sadler, 2005)

Grades	Interpretation
A	Clear attainment of all course objectives, showing complete and comprehensive understanding of the course content, with development or relevant skills intellectual initiative to an extremely high level.
B	Substantial attainment of most course objectives, showing a high level of understanding of the course content, with development of relevant analytical and interpretive skills to a high level.
C	Sound attainment of some major course objectives, with understanding of most of basic course content and development of relevant skills and satisfactory level.
D	Some attainment of a range of course objectives, showing a basic understanding of course content with development of relevant skills.

difficulty is that the quality of performance in a course, judged holistically on the basis of the quality of work submitted, may not be determinable well with the attainment of course objectives.

CRITERIA BASED GRADING MODELS

Since criteria are attributes or rules that are useful as levers for making judgments, it is useful to have a general definition of what criterion is. There are many meanings for criterion (plural criteria) but many of them have overlap. Here is a working dictionary style definition, verbatim from (Sadler, 1987), which is appropriate to this discussion and broadly consistent with ordinary usage (Sadler, 2002). Criterion (n): A distinguishing property or characteristic of anything, by which its quality can be judged or estimated, or by which a decision or classification may be made. (Etymology: from Greek verb *kriterion*: a means for judging).

There are at least four grading models implemented by universities (Biggs, 1999) which are criteria based. These methods are:

- Verbal grade description
- Objective achievement
- Qualitative criteria

Grading models may be designed to apply to whole course or alternatively on specific assessment tasks and some can be appropriate for both. For all grading models explained below, the interpretation of criteria is same with the general definition given above and all of them to make a clear connection between the achievements of course objectives and given grades, without reference to other student achievements.

Verbal grade description: In this model, grades are based on student's achievement to the course objectives. In this form, the given grades are base on interpretations which clarify the attainment amount of course objectives Table 1. This kind of grading method is based on holistically attitude in evaluations.

Table 2: Achievement of objectives (Sadler, 2005)

Grades	Major objectives achieved	Minor objectives achieved
A	All	All
B	All	Most
C	Most	Some
D	Some	Some
E	Few or none	Few or none

Objective achievements: In this form the course objectives will be portioned into major and minor and the achievement of each can be determined by yes or no and the achievements of each objective will be computed (Sadler, 2005) Table 2. Both of these two objective base models make clear connections between the attachments of course objectives and the grades awarded but students can't easily see close connection between the course objectives and assessment items and they are not in strong position to judge how much they reached to the objectives. Therefore these types of models have little prospective value for students. Also there are no indications of whether given grades are for attainment in objectives of a special task or for whole objectives and it will be assessed by its own or in combination to other objectives.

Most educational outcomes and attainments amount cannot be assessed as dichotomous states like yes or no or zero and one, because learning is a continuous process that in contrast with discrete scales it can just be divided into segments satisfactory and dissatisfactory (Sadler, 2005).

Qualitative criteria: Teachers specify the qualitative properties as criteria to be closer to teaching and learning and assessment grading. In this method teachers are obliged to make a judgment about the quality of student responses to each assessment task and objectives. Examples of such criteria are as follows (Sadler, 2005): Relevance, Validity, Organization, Presentation

In this model the grades are given in simple verbal scale for each task such as poor, acceptable, good and excellent. But since in reality student's works are not perfect and there are different descriptions for these verbal scales and some teachers believe that Excellent and A is just for god and no one deserve grade A, the distribution of grades and marks can't be appropriate (Sadler, 2005). In this model scores in different assessment tasks are added together and finally the 100 point scale may divided into segments according to the number of grades.

All aforementioned Methods have weak and strong points. For instance, first model has tried to avoid dispersion of interpretations for grades between different assessors which can affect the given marks. But there is no room for expected objectives and their definitions in design process and final projects. So doors of subjective judgment will be still open.

Second model is based on dividing the expected objectives into major and minor and the evaluation is

completely related to the student's achievements to these objectives but as mentioned before it is not possible to judge about the attainments and achievements in continuum process just by yes or no.

In third form by introducing tasks as criteria for grading and verbal definitions for students achievements amount has improved two previous models but objectives and importance amount of them are still unclear for students and external assessors. So we have to hybrid these methods to reach the improved model.

ANALYSIS AND PROPOSED CRITERIA BASED MODEL IN ARCHITECTURE ASSESSMENTS

In order to shed light on criteria based assessment models, we will investigate on criteria based assessment model which is implemented in National University of Malaysia (UKM) as case study. This University has been chosen because they addressed new form of criteria based model and it will facilitate to survey the students and instructors feeling and reactions to criteria based assessment model in a multi cultural country.

First we will introduce the implemented model and then we will check the influence of this implemented method on students by distributing questionnaire among students and instructors. The one that initiate the definition of different projects (their scale, title, objectives) during architecture education is transmitting new knowledge and experience based on learned related topics, issues and projects in continues process of learning. So the aim of each project is unique to itself and has different layers.

In all submission days, students are required to submit certain documentation such as sheets and drawings which include plans, evaluations, sections, perspectives etc and 3D models which may determine by instructors or leave arbitrary. But these are not just the things that are going to be assessed by jurors. Primary goals that were the basis of problem solving process are the most important part of assessment. So the criteria to be used in assessment and grading are linked directly to the way objectives expressed (Sadler, 2005). Since this approach has some conceptual parallels with the behavioral objectives movement, according to (Mager, 1962), a behavioral objective is not properly formulated unless it includes a statement of intent, descriptions of the final behavior desired, the conditions under which this behavior is to be demonstrated and the minimum acceptable level of performance that signifies attainment of that objective.

Defined architecture assignments, Depends on their type, scale and duration, have different objectives and expectations to assess the student's submissions and different tasks are required. These tasks are based on some practical necessity and some personal standards aligned with course objectives. These tasks will create

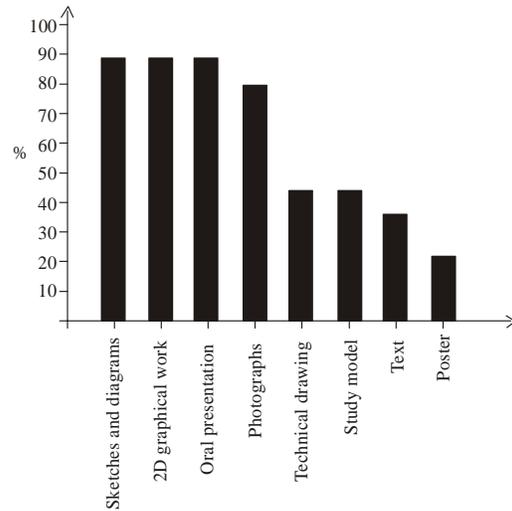


Fig. 1: The most commonly used representation type, instructors require students to use

policies for assessors to intend to take into account in judgment. Eyeballing different evaluation sheets in variety of studios for different projects at UKM, as a case study bring us to this result that the rubric of the tasks is as follow:

Critical Explanation, Logical Development, Proposal and recommendation, Oral and Graphic Presentation

The potential number of tasks relevant to the projects is large for each rubric and task some criteria will be defined. Segregating evaluation extent to more tasks will increase student's opportunities to show their capabilities and sufficiency and gain more chance to get better marks. But in contrast the more objectives are expressed for each task, the more they will operate isolated and will recede from the overall configuration that constitutes a unit of what the students are suppose to do. In addition it will restrict assessors between these defined borders and will confine their authority and experiences in cognition and analyzing students hidden intends in their designing. This is completely in opposition with the main target of inviting external jurors which is benefit from diversity of expert ideas and critical attitudes. So characteristic of objectives are more effective that their numbers in defining flexible evaluation borders. Since not all criteria types' are same, there is no necessity for the number of criteria to be same in different tasks. In fact these are subtitles which are expected from students to do, in order to elaborate the borders of course objectives for assessors. For instance in Fig. 1 we can see tasks with some of their criteria which have defined by related instructor base on course objectives and implemented strategies in studio. Each of criteria is included in marking grid.

On the other hand, according to main focus of education process in certain period, different priorities

Table 3: Sample of evaluation sheet in UKM

	Fail	poor	Average	Good	Excellent	Grade
	Little or no evidence	Beginning	Developing	Accomplish	Exemplary	
Graphic presentation						10%
Composition	
Focus and explanation	
How clear is the information	
.....	
.....	
Critical explanation						40%
Process & idea development	
Detail explanation	
.....	
.....	
Logical development						30%
.....	
.....	
.....	
Proposal and recommendation						20%
.....	
.....	
.....	
Final grade						100

with different attention portion will be dedicated to each objective. This kind of precedence will import to assessment criteria and evaluation sheets (Montgomery, 2002). Therefore each task would have dedicated percentages to show the major and minor objectives and grade amount. Table 3 illustrates this type of grading model.

Since students perform in continuous path, the result of their performance just can be revealed in continuum that can be divided between satisfactory and dissatisfactory. Student's locus this vector derives from quality of their work in response to defined criteria in each task.

So it is needed to define some qualitative levels to apply as a norm to the assessment. Descriptions should have the best overall fit with the characteristics of the submitted projects. The assessor does not need to make separate decisions on a number of discrete criteria, as is usual list form. Such as little or no evidence, beginning, developing, accomplish, exemplary.

However these descriptions are very helpful and effective in appraisal system but finally the qualitative assessment should be able to be transmitted into grades and marks. So we need to coordinate this model to one of the common grading system.

As we mentioned before, using grading systems such as (1-100) or (A, B,..) are not appropriate ways to import to criteria based assessment model because after transmitting students work to numerical grades the connection between course objectives and grades will be completely broken.

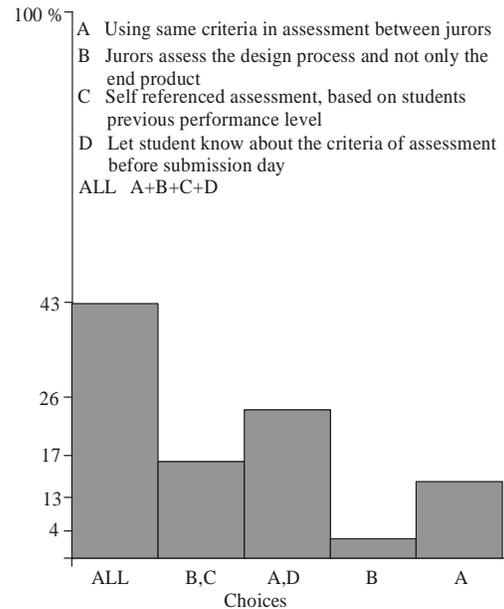


Fig. 2: Student Response to the Question: which factors make the assessment fair to you?

Since marks and grades do not in themselves have absolute meaning in the sense that a single isolated result can stand alone as an achievement measurement or indicator that has a universal interpretation.

Assessment and grading do not take place in a vacuum. Quality of student's work together with interpretations of such judgments can be known as

comprehensive model in judgments. So alternatively, a simple verbal scale could be used for each criterion such as Fail, Poor, Average, Good and Excellent but in this type verbal grade description applies to given assessment task, with a separate description for each grade level (as mentioned before).

So each list of criteria can be elaborated into a marking grid.

Finally components of grades will be weighted before being added together to reflect their relative importance in the assessment program.

There are several forms to show the final grades. The simplest is a numerical rating scale for each criterion, in which case the ratings could be added to arrive at an overall mark or grade for the work.

Using numerical ranges gives the impression of precision and the system is easy to make operational. Introduced model contains most of the strong points of other criteria based models and none criteria base models. These strong points are revealed in Fig. 2.

This method does not depend on ranking or sorting student's projects. It means there is no explicit reference to other student's performance. But final grades are assigned by determining where each student stands in relation to others.

To study the effect of these implemented methods on students, we formulated a survey consisting 20 questions as an initial part of our research and distributed among students. Except first seven and last four open ended questions asking their thoughts on the issue, all the questions in the survey have a likert-type attitude measurement items having five levels.

Also in parallel research we made interviewed with instructors to check the obtained results to each other.

The case study included 28 convinced students and 8 instructors with more than 7 years experience.

The questions in the student's survey can be categorized as follows:

- Show your satisfaction level in named assessment model: Comparing model, criteria based model, holistically grading model)
- What will make an assessment and grades fair to you?
- What will influence jurors and grades in submission days?

Instructors were asked to rank the most commonly used representation types that they require students to use while assessing their study.

Figure 1 Shows that sketches and diagrams, 2D graphical work and oral presentation are important parts of assessment. Beside this 20 student from 23 believed that oral presentation and graphical sketching has the most effect on their grades. Instructors also ratify this issue. 87.5% of teachers mentioned that their assessment will affect by oral presentation and good graphical sketching skills. Just 10% of them believed the oral presentation is redundant and instructors should assess student work only by the material. The student's responses to which factors make the assessment fair to you are illustrated in Fig. 2.

Students were given four choices and they were asked to circle as many answers as needed to best describe their response.

Twenty six percent of students responded that the fair assessment system is one that has specific criteria which all students are aware of implemented criteria before and is same between jurors. Whereas forty three percent of all students believed that moreover these mentioned specifications the fair assessment should be based on student's previous performance level or self referenced assessment and apply to all design process and not just end product. Also 100% of instructors believed that there

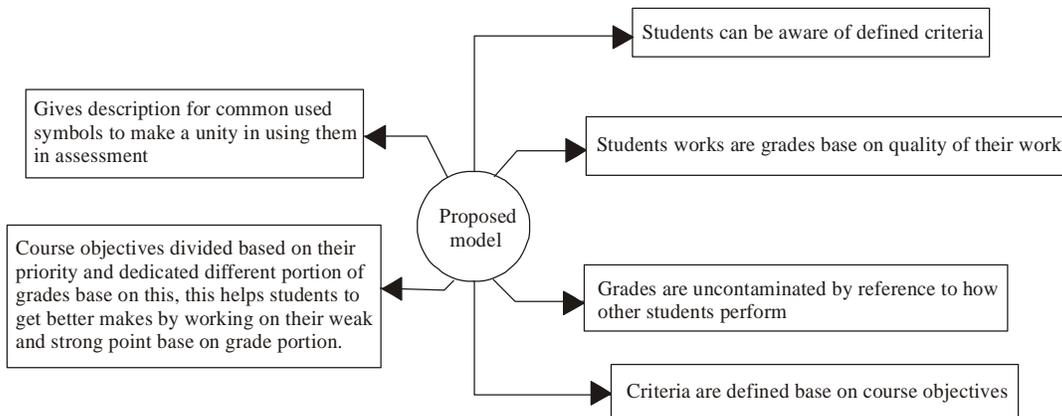


Fig. 3: Traits of implemented method by UKM

should be common criteria among the instructors teaching the same level of students.

The view of students surveyed as to which of the named assessment models you prefer. And the result shown that 82% prefer criteria based models, 13% holistically models and just 5% chose comparative models. This has compatibility with previous results from their chosen specifications for fair assessment models. This has compatibility with previous results from their chosen specifications for fair assessment models. They believed that in fair assessment model each student should be assessed by his/her abilities and progress based on their own background and talent.

Beside this none of instructors voted to comparative systems but they mentioned that they will double check and compare the works of the students that have the same grades as the last phase of assessment.

Result of done survey shown that specifications of implemented model in UKM are approximately congruous with student's preference and instructor's expectation Fig. 3. The only left case which can be seen in students demand and expectation is considering different backgrounds and different talents and the progress level of each student in the assessment model. Of course as in educating system should be suitable to different learning style, assessment model also should be fair and consistence to all students.

Since this model is completely base on course objectives and instructor's expectations and strategies in conducting the project, it makes opportunities for instructors to discuss and criticize their implemented methods in teaching and defining assignment and their objectives. This may lead to improvement in education level.

Although judgments can be made either analytically (that is, built up progressively using criteria) or holistically (without using explicit criteria), or even comparatively, it is practically impossible to explain a particular judgment, without referring to criteria. So it is needed to investigate about all evaluation and assessment methods and find used criteria and merge their potentials to current methods and upgrade the existing models.

CONCLUSION

Since teaching and learning process are different and more complicated in architecture and studio-based majors than theory courses, it is admissible that it's evaluation and assessment are more difficult than other majors and fields.

But there is common thought that believes there is no criterion and norm in their grading and assessing system, in the other word the grading system is holistically and subjective.

This statement also is not incoherent. There is no special criteria and norm among jurors and instructors in evaluating and grading student's project and if they have it is not known and explained to students. Students themselves are seem to be inducted directly into the processes of making academic judgments so as to help them make more sense of and assume greater control over, their own learning and therefore become more self-monitoring.

In recent years, more and more universities have made explicit overtures towards criteria-based grading to make assessment less mysterious and more open and more explicit. But whenever there is no discussion and contribution in architecture assessment, there is no way to improve and development in this model and many institutions may employ identical or related models without necessarily calling them criteria-based.

The introduced model and the results of survey is just the first step of investigation in this topic and it is not correct to generalize it to different students with different backgrounds and cultures. but it can be a suitable start point to further steps and can prepare a chance to more discussions. The further framework can be self-referenced assessment and grading, in which the reference point for judging the achievement of a given student is that student's previous performance level or levels. The component that counts in this model will include the amount of improvement that each student makes.

REFERENCES

- Biggs, J., 1999. *Teaching for Quality Learning at University: What the Student does* SRHE and Open University Press, Buckingham, UK.
- Brown, S., 1999. *Assessing Practice' Assessment in Higher Education: Choosing and Using Diverse Approaches*, Open University Press, UK, pp: 95.
- Canon, R. and D. Newble, 2003. *Handbook for Teachers in Universities and Colleges*. 4thEdn., Kogam page, London, ISBN:10-0749431814.
- Crooks, T., M. Kane and S.A. Cohen, 1996. Threats to the valid use of assessment. *Assess. Educ.*, 3(3): 265.
- Gijbels, D., G. Van de Watering and D. Filip, 2005. Integrating assessment tasks in a problem-based learning environment. *Assess. Eval. Higher Educ.*, 30(1): 73-86.
- Gibbs, G., 1999. *Using Assessment Strategically to Change the Way Students Learn*. In: Sally, B. and G. Angela, (Eds.), *Assessment Matters in Higher Education: Choosing and Using Diverse Approaches*. Open University Press, Philadelphia, PA.
- Hewitt, A., 2007. A Critique of the assessment of professional skills. *Leg. Ed. Rev.*, 17(1 and 2).
- Lawson, B., 1980. *How Designers Think?* The Architectural Press Ltd., London.
- Mager, R.F., 1962. *Preparing Instructional Objectives*. Fearon, Belmont, CA.

- Miller, C.M.I. and M. Parlett, 1974. *Up to the Mark: A Study of the Examination Game*. Society for Research into Higher Education, Guildford.
- Montgomery, K., 2002. Authentic tasks and rubrics: Going beyond traditional assessments in College teaching. *Coll. Teach.*, 50(1): 34-39.
- Sadler, D.R., 1987. Formative assessment: Revising the territory. *Assess. Educ.*, 5(1): 77.
- Sadler, D.R., 2005 Interpretations of criteria-based assessment and grading in higher education. *Assess. Educ. Higher Educ.*, 30(2): 175-193.
- Sadler, D.R., 2002. Ah! ... So that's 'Quality.' In: Schwartz, P. and G. Webb, (Eds.), *Assessment: Case Studies, Experience and Practice from Higher Education*. Kogan Page, London.
- Utaberta, N., Hassanpour and B. Ismar, 2010. Redefining Critique Methods as an Assessment Tools in Architecture Design Studio. *WSEAS Transaction on Advanced Education*, pp: 359.