

## Reliable Assessment of Drawings on Architectural Technology Courses.

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### SYNOPSIS

*The purpose of this project is to refine and rationalise the process where different tutors assess architectural drawings in order to mitigate personal subjectivity thereby generating more reliable assessment decisions. The study seeks to provide a structured approach to drawing assessment across teaching teams to reduce possible complaints regarding apparently inconsistent results between different classes. Objectives include promoting consistent drawing assessment between tutors on level 5 drawing papers within the Unitec Diploma in Architectural Technology. A clear structured method is envisaged whereby tutors evaluate content and draughtsmanship across individual drawings to produce more consistent assessment decisions across different cohorts on papers. Methodology in this project includes document analysis of early assessment material on the relevant papers. Reflection on the value of this material towards reaching consistent assessment decisions led to the development of more detailed marking rubrics for use across numerous drawing papers. After each course iteration reflection discussions and feedback were noted regarding the utility of the resource, drawing assessment criteria and specific criteria weightings. Recent feedback indicates that the latest rubrics are effective and close to final forms. Many tutors have indicated their satisfaction with rubric design, format and ease of use. Project findings will benefit tutors across construction drawing papers, helping them generate clear, reliable and consistent assessment decisions both individually and collectively. The approach can be utilised to assess drawings at various project stages and demonstrates clearly to tutors and students what is being assessed and also importantly, how it is being assessed.*

**Keywords:** Architectural, Drawings, Assessment, Feedback

### INTRODUCTION

This study has its origins in observations of numerous approaches to assessing different architectural drawing types across 27 years of teaching including presentation drawings shown to clients and construction drawings used to build projects. With large teaching teams, a potential risk of marking diversity and surfeit of personal opinion was noted. This project investigates marking rubric development for drawings seeking to generate reliable results whilst mitigating subjective tutor opinion.

### RESEARCH AIM AND OBJECTIVES

This study's objective is to generate marking rubrics enabling reliable assessment of architectural drawings within teaching teams through a clear process broken down into two main criteria, content and draughtsmanship. Aims include consistent assessment decisions based on a structured approach helping reduce potential student complaints.

### RESEARCH METHODS

Methodology included literature review, reflective analysis and action research. Reflective analysis utilised the author's extensive experience of teaching drawing papers. Action research

includes discussions with Unitec colleagues in course meetings and discourse at Architectural Technology National Moderation events over the last 4 years. Literature review is mainly from books due to the lack of papers found relating to the specific research topic.

## PRELIMINARY FINDINGS

Literature yielded a number of important points regarding specific architectural drawing explanations to students and for justifying assessment approaches to tutors. Drawings have an intended purpose and draughtsmen should be aware of who will view them. What are the drawings supposed to do? Why do they even exist?(Leibing, 2009). Builders are not concerned with drawing preparation methods as long as information is accurately presented and correct (Osamu A Wakita, 1999). Drawings should be comprehensible and easily understood with no unintended distractions (Ching, 2015). Literature unanimously agreed that drawings need to be clear with one stating the concept of the 4 cs. Clear, Concise, Complete and Care (Leibing, 2009). Other drawing qualities deemed essential were neatness, legibility, unambiguity and logically arranged (BRANZ, 2018). Drawing organisation was highlighted including the LACS system used in early level 4 and 5 drawing studio papers on Unitec's Diploma in Architectural Technology. LACS categorises drawings as Location, Assembly, Components and Schedules and drawing interrelationship was also emphasized (Clarke, 2016; Osamu A Wakita, 1999). Uniformity in organisation was stressed as was referencing and version control where revisions made (Ching, 2015; Clarke, 2016; Leibing, 2009). Architectural and engineering drawings need to be comprehensive, correct, accurate and informative but architects tend more to use line weight variation to communicate information and clarify exact requirements (Leibing, 2009). Clashes, where lines or symbols appear on top of others are to be avoided as these can obscure vital information. Avoiding misinterpretation is equally important with builders having apparently built unintended things such as revision clouds (Shaan Hurley, 2007). Errors can be mitigated by basic good practice such as not interrupting or crossing dimension lines nor running leader lines across details (Osamu A Wakita, 1999). Drawing content involves providing comprehensive, correct information with layout control whilst retaining intent and purpose. Checklists were seen as an effective way to confirm suitable drawing content especially where addressing regional needs and considerations necessary (Leibing, 2009). Content discussions within literature did not explicitly address drawing assessment, a prime aim of this report which focuses on construction drawings assessment but can relate also to presentation drawings intended to persuade a client of a design proposal's value (Ching, 2015). This report proposes breaking assessment of drawings down into two parts, drawing content and draughtsmanship, factors typically relevant to the vast majority of drawings whether presentation or construction. Students typically want to know What is being assessed and How is it being assessed. Literature, key words emerging such as knowledge, checklists, accurate etc equate to the What element and map easily onto the Drawing Content we will assess. Others such as graphical depiction, legible, logical sequence, neat, comprehensible etc. relate to the How aspect which again maps neatly onto the Draughtsmanship element of our assessment approach.

Drawings have relevant and complete content such as structure, construction systems and main checklist items.	0	1	2	3	4	83			
• Cover page - 2	0	1	2			2			
• Ground Floor plan - 8	0	1	3	4	5	6	7	8	8
• 4 elevations 4	0	1	2	3	4	4			
• Component drawing and Schedules. 4	0	1	2	3	4	4			
• Site Town planning 4	0	1	2	3	4	4			
• Timber Sub Floor 8	0	1	3	4	5	6	7	8	8
• Concrete Slab 8	0	1	3	4	5	6	7	8	8
• Roof framing plan 8	0	1	3	4	5	6	7	8	8
• Roof Cladding plan 4	0	1	2	3		3			
• Construction section 8	0	1	3	4	5	6	7	8	8
• Assembly details 18	0	3	6	9	12	15	18	18	
• Ext finishes schedule 4	0	1	2	3	4	4			
• Internal finishes schedule 4	0	1	2	3	4	4			
Good Draughtmanship eg:-	Fail	Ok	Excellent	Possible 30					
	0	1	2	3	30				
• Lineweights and Styles	0	1	2	3	3				
• Sheet Layouts	0	1	2	3	3				
• Set out of Notes and Legends,	0	1	2	3	3				

Figure 1: Extract of previous rubric showing assessment approach (MMG. Unitec 2017)

Figures 1 and 2 show how assessment approaches at Unitec have evolved over recent years. The 2017 rubric breaks down marking into content and drafting with guidance regarding drafting criteria. In practice it was unwieldy and cumbersome involving assessing each drawing twice, first for content then revisiting for drafting. Results were reliable but process impractical and time consuming. Reflection led to development of the 2019 rubric where content and drafting are marked simultaneously without revisiting drawings, a more efficient timely method which still maintains a rigorous and comprehensive assessment process.

		Max mark	Awarded	TOTAL
1	<b>COVER SHEET</b>			0
	Content	2		
	Layout Design	3		
2	<b>SITE AND TOWN PLANNING</b>			0
	Content	5		
	Draftsmanship	5		
3	<b>CONCRETE SLAB PLAN</b>			0
	Content	5		
	Draftsmanship	5		

Figure 2: Extract of current rubric showing allocations for each drawing (MMG. Unitec 2019)

### RESEARCH SIGNIFICANCE

This study is important as utilising consistent approaches to assessing architectural drawings will help avoid perceptions of tutor inconsistency in marking of student work across different cohorts. The dearth of literature on architectural drawing assessment also justifies this study and its ability to progress the discussion and analysis of the main factors for consideration. This approach is a work in progress but various tutors in Unitec have used it to date and found it works well. Drawing weightings and marks allocation opinions may differ but can be discussed and adjusted. This method also recommends a professional judgement mark of significant weighting in any final rubric to moderate the overall final outcome. Unitec tutors agree that numbers alone do not tell the whole story and this professional judgement component is felt to be an important arbiter of the final grade for drawing sets submitted for assessment.

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