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A case study introducing an innovative teaching and learning environment for a tertiary level graphic design unit

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Abstract
The School of Design at Curtin University of Technology, Perth, Western Australia, is attempting to employ innovative teaching methods in what used to be seen as studio based areas. This example is a case study of a graphic design unit entitled 'Design Principles' which introduces students to the creative utilisation of grid systems. The study introduces a simple but highly effective set of strategies created by blending the strengths of a studio based model with the strengths of a constructivist model. The result is a new teaching and learning environment which utilises facilitated learning and a process focus workbook which houses student self appraisal and reflection forms, project based learning and problem solving activities, peer process assessment, design analysis and criteria based assessment forms.

This paper investigates teaching and learning methodologies and reflective practice for both the student and lecturer in the form of a case study within the context of action research. The paper describes the unit as a sequence of events supported by student and lecturer reflection and evaluation statements.

The presentation will be supported by visuals of both the documentation within the workbook, and student work.

Keywords: tertiary, teaching and learning, case studies, project based learning, design processes, design cognition, design pedagogy

Introduction to the unit
Design Principles is run as a rotational unit where four groups of 20 students take their turn in participating for two hours a week for four weeks. This case study will focus on the first semester design principles unit entitled, 'The Creative Utilisation of Grid Systems'. This unit introduces the principle of grid systems and the process of sequential development, refinement and visualisation.

The past leading to the present
This first semester component of Design Principles has been taught once a year from 1992 to the present. For the first four years the unit was delivered in a traditional studio based model, via informal lecture and group discussion of the day's activities. The students carried out the given activities in the studio with the lecturer interacting on an individual basis, giving the students feedback on work in progress. Small group work was introduced to ensure peer feedback and interaction. For the first four years the unit ran for four hours per week with a maximum class size of fifteen students. By the fifth year the hours had been reduced to two hours per week with a minimum class size of twenty students. Further to the increase in student numbers and reduction of contact hours, it became evident to the lecturer that although the studio based model had areas of strength it also had shortcomings that needed to be addressed. The solution was to assess the current methodology employed, research alternative models and finally rewrite the unit. This section identifies the changes by detailing the aims and objectives and describing the outcomes.
The aim:

To create a new learning environment which acknowledges both the studio based model and self paced learning by blending strengths from the two.

The objectives:

1. To reflect on the pedagogy employed for the unit and identify the strengths and shortcomings inherent in the 'studio based model'.

2. To research student driven, self paced teaching and learning models and identify the shortcomings and strengths inherent within these strategies.

3. To develop explicit criteria from which to create a new teaching and learning environment.

1. To reflect on the pedagogy employed for the unit and identify the strengths and shortcomings inherent in the 'studio based model'

"The generalised educational setting, derived from the design studio, is a reflective practicum. Here the students mainly learn by doing, with the help of coaching." (Schon, 1987:xii)

"They learn by undertaking projects that stimulate and simplify practise; or they take on real-world projects under close supervision." (Schon, 1987:37)

The following is a summary which makes clear the strengths versus the shortcomings with regard to i) teaching, ii) learning and iii) substantive content of the unit in the current studio based model. This will lead to an understanding of the relationship between teaching and learning processes and the work produced.

In short, the teaching methodology employed for the unit was based on imparting information in the form of good examples and step by step strategies from the lecturer to the student body and then, further, in more detail to each student as they worked in class. This was achieved by sitting with each student, looking at their work in progress, correcting their work and encouraging their individual expression. The unit included project based learning, problem solving activities, peer feedback and criteria-based assessment.

i) Teaching strengths: Providing good examples, introducing step by step strategies and encouraging individual expression.

Teaching shortcomings: Sitting with each student and repeating the same information (a time consuming and exhausting process for the lecturer.)

ii) Learning strengths: Project based learning, problem solving activities, allowance for individual expression, peer interaction.

Learning shortcomings: Students relying on lecturer feedback before being able to progress, having to work in class within a given time constraint, relying on the lecturer to research and supply all information, taking on the lecturer's aesthetic and conceptual approach to design.

iii) Unit content strengths: Industry relevant projects, lecturer's working history and intrinsic knowledge of the processes and principles being taught, peer feedback, criteria assessment.

Unit content shortcomings: Content based exclusively on the lecturer's working history and intrinsic knowledge of the processes and principles taught. Limited peer interaction and assessment, limited student decision making processes and limited student reflection and self appraisal processes.

2. To research student driven teaching and learning models and identify the shortcomings and strengths inherent within these strategies.

"A place where learners may work together and support each other as they use a variety of tools and information resources in their guided pursuit of learning goals and problem-solving activities." (Wilson (ed), 1996:5)

"Enhance the individual's own view of the way that they do it - by them becoming
metacognitive about their own designing."
(Lawler, 1997:205)

The second objective was achieved by reading relevant texts and speaking with colleagues. The strengths versus the shortcomings with regard to i) teaching, and ii) learning for student learning environments are investigated and stated.

i) Teaching strengths: Teaching via facilitation and guidance within a clearly defined curriculum structure.

Teaching shortcomings: Misunderstanding and confusion can occur if the unit content is not delivered within a clear and informative structure.

ii) Learning strengths: Reflective practice, problem solving activities, decision making processes, students working in their own time and at their own pace, facilitated teaching to support student driven learning.

Learning shortcomings: From the author’s experience, too much freedom in the student driven initiative can result in students not participating in the unit, not fulfilling project requirements and not knowing how to progress, resulting in frustration and confusion.

3. To identify explicit features from which to create a new teaching and learning environment.

The following features were derived from determining the strengths of both the ‘studio based’ and ‘student driven, self paced’ models.

- the facilitation of learning,
- unit content based on lecturer’s working history and intrinsic knowledge of the processes and principles being taught,
- unit content based on research within the genre of design being delivered,
- providing good examples,
- introducing step by step strategies,
- encouraging individual expression,
- project based learning,
- industry relevant projects,
- problem solving activities,
- peer interaction,
- peer feedback,
- criteria-based assessment,
- reflective practice,
- decision making processes,
- encouraging student driven learning,
- students working at their own pace and in their own time.

With the features set, the modification process took place at the end of 1996. The outcome for 1997 was a new delivery mode and structure to the unit which included a series of session worksheets and student reflection and assessment forms. The modified unit was trialled in 1997 and with the assistance of student feedback and lecturer reflection it was refined and modified further for 1998. The outcome for 1998 was a new teaching and learning environment which fulfilled the aim of blending the strengths of the ‘studio model’ with ‘student driven, self paced learning’ strategies.

The new teaching and learning environment

This section highlights some of the desirable features incorporated in the new teaching and learning environment.

Content delivery:

The content is delivered via lecturer facilitation which utilises support material such as visual aids i.e. overhead projection, a student work book entitled "Process Focus Workbook", group work involving peer feedback, peer process assessment, design analysis and finally criteria-based assessment.

Teaching and learning support material:

The ‘Process Focus Workbook’ for students was designed to support the facilitation of learning, and houses:

- The aims and objectives of each session
- Theory notes
- Problem solving and project based learning: two graphic design projects are carried out by the student, in order to apply the theory and principles introduced within the unit.
- Reflection and self analysis forms (see Figure 1 in Appendix) A student reflective and self-analysis form which lists the Core Abilities and Behavioural Objectives
presented in the unit. Each listing has a corresponding rating between one and four, one being the lowest and four the highest. This form is filled in twice during the unit, at the beginning of session one, and at the end of session four. The student fills in the form with the understanding that there is no right or wrong answer and that the intention is to stimulate personal awareness and reflection on their perceived abilities within the stated core abilities and behavioural objectives. Furthermore, by filling the form in again at the end of the unit, the student becomes aware of areas of knowledge gained, areas of improvement and areas which may require more attention.

- Peer process assessment (See Figure 2, Appendix) The interim deadline forms aid the assessment of specific outcomes derived from each session's activities and assessable components. This process assessment has been included:
  - to involve the student in the assessment procedure, and
  - as a method of putting constructive feedback into practice.

- Design analysis and critique forms (see Figure 3, Appendix) Each student orally presents their final project solutions to another student. At the completion of the presentations, the students critique each other's work. This is achieved by answering a series of questions set by the lecturer. This process has been introduced to:
  - support the student to view work beyond aesthetics and into critical analysis,
  - practise constructive feedback,
  - to gauge student awareness of design principles and process.

- Step by step design strategies (See Figure 4, Appendix) Step by step activities stated in the workbook are based on an industry standard Graphic Design development strategy and have been introduced to cater for those students who do not already have a development strategy, for those who are in the early stages of establishing one, and for those who have been using a strategy for a number of years.

To conclude this section, comment is now made on the relation between the original studio based teaching and learning model, the new teaching and learning environment and the work produced. This comment is based on reflection and comparative analysis of the work produced prior to and after implementation of the new environment.

In the original studio based model where individual interaction between the lecturer and student was enforced, many students did not progress without input from the lecturer and often made appointments to see the lecturer between sessions for further feedback and clarification. In general, the work produced was sound with the occasional exemplary result. However, many solutions would include the lecturer's aesthetic and conceptual approach to design.

In the new environment, teaching takes the form of the facilitation of curriculum content. Individual interaction between lecturer and student is minimal and often non-existent, even though the lecturer makes time available for those who require it. The students are free to make their own decisions, to fully express themselves aesthetically and conceptually, and are able to work through projects and activities in their own time and at their own pace. The results have been rewarding for both lecturer and student, and the work produced is often of a high to exemplary standard: that is, the standard according to the criteria set by the lecturer, (see Figure 5, Appendix).

To summarise, the new environment which acknowledges both the studio based model and self paced learning strategies by blending strengths from the two, supports the student to learn through doing, and, as a consequence, the production of work of a high design aesthetic and conceptual standard.

A review of the outcomes via a student evaluation questionnaire (see Figure 6, Appendix)

The outcomes were reviewed via a student evaluation. The following are quotations which summarise the theme of comments from this target audience.
Quotations referring to the efficacy of the Core Abilities and Behavioural Objectives form:

"It outlined every aspect clearly and enabled me to easily pin point certain areas of ability and behaviour I had to improve or concentrate on."

"It was an invaluable tool in being able to assess my level of ability and behavioural tendencies. It enabled me to accurately pin point my areas of strength and weakness."

"It definitely enabled me to reflect, and see that I am in dire need of time Management Skills. A humbling experience that questioned my motives as a potential designer."

Quotations referring to the efficacy of the flexible learning approach as opposed to formal lectures and working in class:

"It gave me time to really think about areas I needed to address, and time to re-assess this decision (sic) and reflect on it."

"YES, I cannot stress that enough. In the past there has been too much wasted time in class and the book lets you work at your pace, reinforce what you learnt in class or if you miss parts you can go back and make sure you covered all the requirements."

Conclusion

This unit undergoes reflection, evaluation and refinement each semester and is still in the process of being refined. However, the success of many of the components within this unit has inspired the author to develop the methodology further and implement it into the third year design specialism entitled Visual Communication. The work book has been modified to include design analysis and deconstruction as well as design principle focus initiatives. This new development is being trialled in first and second semester of 1999.

References

• Lawler, Tony (1997) 'Exposing and Improving the Metacognition of Designing Through Practical Structured Workshops'. In Smith, J. S. (ed) IDATER 97, Department of Design and Technology, Loughborough University, 205-211.

• Schon, Donald (1987), Educating the reflective practitioner- toward a new design for teaching and learning in the professions, Jossey-Bass Inc, San Francisco.


Core Objectives

- Willingness to accept responsibility
- Capacity for innovation

Task Management

- Identify the brief and daily activities
- Fulfill the requirements of the brief and daily activities.

Capacity for critical thinking

- Ability to identify visual options
- Grid variations

Manual and technical competence

- Grid drawing
- Final design
- Grid and visual

Group process skills/Co-operation

- Maintain direction and momentum
- Give constructive feedback
- Listen for the value of feedback
- Stretch the boundaries of others work

Time management

- Clarity and establish all deadlines
- Meet all deadlines
- Ensure plenty of time for exploration, development and refinement

Learning skills

- Ability to develop a grid and idea thoroughly
- Ability to explore grid variability
- Independent learning strategies
- Time management

Week One:

- Please determine the level of effort for each process, and place a tick around the mark accordingly.
- Find an ask - initial idea thresholds
- Three examples of:
  - Two columns
    - Three columns
    - Four columns
  - Draw up half size proportion of best version
  - Six development sketches
  - Render neatly
  - Mount in the centre of an A3 block sheet
  - Total

Week Two:

- Three thresholds grids for each season
- Choose best grid for each season
- Draw grids on separate pieces of paper at half size
- Three development sketches for each season
- Three half size visuals of each season

Week Three:

- Comprehensive half size development and refinement visuals for each.
### Project Assessment Criteria

<table>
<thead>
<tr>
<th>Category</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language and Conventions</td>
<td></td>
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<tr>
<td>Language and Conventions</td>
<td></td>
</tr>
<tr>
<td>Graphic Design</td>
<td></td>
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<tr>
<td>Graphic Design</td>
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<td>Typography</td>
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<td>Typography</td>
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<td>Appropriateness</td>
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<td>Appropriateness</td>
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<tr>
<td>Layout</td>
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<td>Layout</td>
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<td>Text and Image Integration</td>
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<td>Text and Image Integration</td>
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<td>Placement</td>
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<td>Placement</td>
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<td>Colour</td>
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<td>Presentation</td>
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<td>Presentation</td>
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<tr>
<td>Overall</td>
<td></td>
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<tr>
<td>Overall</td>
<td></td>
</tr>
</tbody>
</table>

### ACTIVITIES

1. **Lecture:**
   - 1.1 "Introduction to the unit."
   - 1.2 "Encouraging Graphic Design Diversity by utilising Grids Systems."
   - 1.3 "Defining Day Ones activities."

2. **Day Ones Activities - Ruled Grid Systems**
   - In these exercises, you will be working with two, three and four-column grids. A4 format.
   - 2.1 Look through magazines and choose a single page advertisement or part of an article that has:
     - a. a minimum of one image,
     - b. two columns of text,
     - c. A major heading,
     - d. Sub heading. (could be a by-line under the major heading or an introduction heading to the text)
   - Explore new ways in which to design this spread using two, three and four-column grid systems. i.e.
     - 3x Two columns,
     - 3x Three columns and
     - 3 x four columns.
   - **Begin with thumbnails and experiment with as many ideas as possible. A minimum of three examples.**
     - 2.2 Choose one version that you believe is the best out of all your experiments.
     - 2.3 Draw up the article in half size proportions.
   - Begin to develop your chosen direction, experiment with fonts, leading, kerning, colour and so on. Until you are completely happy with the way the article is communicating.

   A minimum of 6 development sketches.

   - 2.4 From the six, choose the best, developed layout.
   - 2.5 Render neatly via traditional methods, i.e. felt pen, or via the computer.
   - Mount the finished visual, centred on an A3 sheet of black paper and staple it to the back of Day One's Activities and development work.

   **WHAT IS DUE NEXT WEEK?**
   - 1. All of week one activities stapled in order of activities as stated in the workbook.

**ASSESSABLE COMPONENTS**

1. Each days activities clearly labelled with your name and the title of the activity being explored. For example:
   - Donna Plumb: Thumbnails: Two column grids.
   - Staple all of the work in order as specified in the handout.

2. All activities carried out as specified in the handout.
   - For example, if it states:
     - **A minimum of three examples each of each column.** e.g. 3x Two columns, 3x Three columns and 3 x four columns.
   - Then this is what will be looked for and assessed.

3. Neatness and clarity of all work.
4. Level of effort.
5. Innovation.
### Project Assessment: Criteria

#### Weekly Activity Breakdown
The weekly activity marks were derived from averaging the peer and lecturer assessment.

<table>
<thead>
<tr>
<th>Week</th>
<th>Peer</th>
<th>Lecturer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk 1</td>
<td>/10</td>
<td>/10</td>
<td>/20</td>
</tr>
<tr>
<td>Wk 2</td>
<td>/10</td>
<td>/10</td>
<td>/20</td>
</tr>
<tr>
<td>Wk 3</td>
<td>/10</td>
<td>/10</td>
<td>/20</td>
</tr>
<tr>
<td>Total</td>
<td>/30</td>
<td>/30</td>
<td>/60</td>
</tr>
</tbody>
</table>

### Comments
- /10 Comments: Necessary for dates

#### Core Abilities

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall the project has been handled with professional effort, resulting in a professional, creative solution.</td>
<td>/20</td>
<td></td>
</tr>
<tr>
<td>Overall the project has been handled competently and with effort, resulting in a competent solution.</td>
<td>/18</td>
<td></td>
</tr>
<tr>
<td>It is evident that the project has been tried, resulting in a sound solution.</td>
<td>/15</td>
<td></td>
</tr>
<tr>
<td>It is evident that the project has been tried at a superficial level, resulting in a poor solution.</td>
<td>/10</td>
<td></td>
</tr>
<tr>
<td>It is evident that the project has not been tried and the result is below an acceptable standard.</td>
<td>/5</td>
<td></td>
</tr>
</tbody>
</table>

#### Grid/Theme Consistency
- The grid/theme has been used appropriately, all elements integrate well, resulting in a visually pleasing, entertaining and functional solution. | /10 |
- The grid/theme has been used appropriately, all elements integrate well, resulting in a competent solution. | /8 |
- The grid/theme has been used to a good level, more attention to proportion and balance is required to take it to the next level of competency. | /7 |
- The grid/theme requires further development: grid, alignment, layout. How far has it been achieved? | /5 |
- The grid/theme is not consistent and below an acceptable standard. | /3 |

#### Grid Innovation
- The grid is innovative, entertaining and breaks new ground in element placement. | /10 |
- The grid is innovative, more attention to placement and element integration. | /8 |
- The grid is sound, more attention to placement, element integration and balance is required. | /7 |
- The grid is not innovative, it is predictable. | /5 |
- The grid is weak and below an acceptable standard. | /3 |

#### Mental and Technical Competence
- The visuals have been presented and mounted at a professional level. | /10 |
- The visuals have been presented and mounted competently, more care needed. | /8 |
- The visuals and mounting require more care. | /5 |
- The visuals and mounting is below an acceptable standard. | /3 |

#### Assessment of Design Analysis and Objective Criticism
- Comments revealed a deep understanding of design and objective criticism. | /10 |
- Comments revealed a sound understanding of design and objective criticism. | /7 |
- Comments revealed some understanding of design and objective criticism. | /5 |
- Comments revealed very little understanding of design and objective criticism. | /2 |

#### Total | /60 |

**This questionnaire has been designed to evaluate Design Principles 291 "The Creative Utilisation of Grid Systems". The information you supply will support the future development of the Unit. If you require more space please write on the back of this sheet. Your participation is invaluable and appreciated, please print neatly.**

The Core Abilities and Behavioural Objectives form was designed for three reasons:

a) To highlight your awareness of the Core Abilities and Behavioural Objectives introduced, implemented and practiced in the unit.

b) As a tool to enable the student to reflect on, record and therefore become aware of their perceived level of skill in the stated Core Abilities and Behavioural Objectives.

c) To support the student in determining knowledge gained by participating in the unit, areas of improvement and areas where more attention is required. This was achieved by filling the form in twice, once at the beginning of session one and then again at the end of session four.

**How well did this form work in achieving a)?**

**How well did this form work in achieving b)?**

**How well did this form work in achieving c)?**
This Unit was created within the teaching and learning approach of 'Flexible Learning', this was achieved by introducing the material via a mini lecture and delivering the activities in a Workbook. This approach enables the student to work through the activities in their own time and at their own speed, rather than the student working in class and waiting their turn for individual feedback.

**Did the flexible learning approach, rather than more lectures and working in class help you?**

The aim of the student working through a set of step by step development and refinement procedures was to:

a) Introduce the student who does not already have a model/strategy to a recognised studio practice model.

b) Introduce the student to a model/strategy that may be different to the one they use currently, but may be of use in expanding and or refining the one they currently use.

c) To introduce a new model/strategy to those students who have been using a set strategy for a number of years with the intention of expanding any set thinking.

**Did the model/strategy cover any of the above aims, if so which one? (please add any comments to your selection)**

a)  

b)  

c)  

comments:

If not, did model/strategy contribute to you in any other way? please state.