AN INTEGRATED TEACHING STRATEGY: REFLECTING ON A COLLABORATIVE DESIGN PROJECT

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Abstract

An integrated teaching strategy was employed at a first year level in the Department Interior Design to strengthen the connection between first year modules and include participation from a related design discipline in the Faculty of Art, Design and Architecture. The teaching strategy aimed to integrate the knowledge and skills that students gain within separate modules and develop their understanding of the interdependence of content that is taught throughout the programme and across departments. This paper reflects on a collaborative project which addressed and introduced the aim of this teaching strategy. The project was conducted across three first year modules within the Interior Design programme and extended to involve third year participation in the Department of Industrial Design. The collaboration and involvement of the third year Industrial Design students exposed the first years to a related design discipline and introduced a multidisciplinary dimension to the project.

The collaborative project introduced first year students to the design problem solving process and advanced the lateral thinking process for third year students. This was done through exploring and integrating the parts (components) of a project before assembling the three-dimensional space or object. A hermeneutical understanding is therefore introduced which challenges the existing understanding of the student and assisted in stimulating an understanding of lateral thinking solutions. The reflection presented in this paper includes feedback from students which was obtained through the presentation of a project evaluation questionnaire. Findings are presented to explain both the complexities as well as the successes of the project.

Keywords: *integrated teaching strategy, collaborative project*

Introduction

Students entering the first year of study in Interior Design, at the University of Johannesburg, represent a diverse group of individuals that vary greatly in the abilities and skills required to execute Interior Design projects. Since 2008, the Department identified a decline in the percentage of students with prior art and/or design experience (Breytenbach & Johnston 2008). In 2011, the Faculty of Art, Design and Architecture first year experience survey indicates that only 38 percent of the 2011 first year students' cohort has prior art and design experience. In 2010 this average was 45 percent which indicates a drastic decline in the Faculty (Hollander 2011). This decline in prior art and design experience raised concerns around first year readiness and prompted the Department of Interior Design to revisit first year teaching and learning strategies. In addition, a new cohort of students entered the first year in 2009. These students were the first group that had completed the revised secondary school curriculum. The knowledge and skills levels of this "new type of student" were unknown and untested within the tertiary environment and first year lecturers were required to monitor the progress of the students closely. As a result the first year lecturers in the Department of Interior Design monitored their performance and presented feedback annually to the Department. Therefore, in an attempt to address the first year learning needs identified in 2009 and 2010 an integrative design project was introduced in the first semester programme in 2011. This paper commences with a description of the teaching and learning challenges and the teaching focus of the project in an attempt to explain the background and motivation to the focus of a collaborative project introduced at first year level.

Identifying the design teaching challenges

The project described in this paper was introduced to address the teaching and learning challenges identified within the Department of Interior Design, whilst placing particular focus on the first year, first

semester experience. Four teaching and learning challenges were identified which required consideration in the Department's teaching and learning strategy. The first three challenges were identified through observation and interaction with students during studio sessions over the past three years. The fourth challenge was presented in 2010, as a multidisciplinary Faculty strategic initiative.

The first teaching challenge was observed by studio lecturers in the Department. Lecturers noted that a large part of the students' visual frame of reference is determined by their everyday interaction and dependence on digital communication devices such as the internet, television and cell phones. These devices are instantly accessed when problem solving is required. Populist images, communicated through digital media, are not interrogated in the design process and distract the student's focus and response to design briefs. This creates a significant challenge when teaching design, since digital skills and references as well as populist preconceptions need to be integrated, in a positive manner, in the design teaching and thinking process.

The second challenge was identified through comparing the output delivered by students before 2009 to the output delivered in 2009 and 2010. As previously stated, a rapid decline in a prior art or/and design experience was noted. It was identified that the vast majority of students require a step-by-step learning experience through which they can obtain basic skills in drawing (both perceptual and conceptual), painting (understanding and use of colour), model making (constructing three dimensional models from flat shapes).

The third challenge was evident through both discussions with students and the output delivered in the various modules. It was evident that Interior Design students' approach the modules in the programme as unconnected entities and as a result they are unsuccessful in integrating knowledge and skills obtained in various first year modules in design projects. The task-orientated approach of students was labelled as a "pigeon-hole approach". This response requires that lectures over emphasise the relationship between modules from first to third year and regularly introduce projects that demonstrate the relevance and relationships between knowledge and skills obtained within in a particular year and between different years within the programme.

The fourth challenge that required attention was to address the limited understanding that students have of related design disciplines. The Faculty of Art, Design and Architecture consists of eight departments namely; Architecture, Fashion, Graphic, Jewellery and Manufacture, Industrial, Interior, Multimedia Design and Visual Art. In 2010, departments were encouraged to further increase multidisciplinary design projects to introduce students to team work and problem solving in order to enhance their experience and provide exposure to the broader spectrum of design disciplines. The project, described in this paper, was therefore constructed with the intention to integrate the first year learning experience as well as involve student participation with the Department of Industrial Design.

Consulting literature whilst developing the teaching strategy

The first stage of teaching problem solving

An investigation into teaching and learning strategies identified the book written by Killen (2010) *Teaching Strategies for Quality Teaching and Learning.* This book is written from an educator's perspective and aims to address teaching strategies across a broad range of learning areas and disciplines. He identifies various ways in which problem solving can be used as part of a teaching strategy. Killen (2010) identifies three categories; teaching *for* problem solving, teaching *about* problem solving and teaching *through* problem solving. In the first category, teaching for problem solving, Killen (2010) explains that students need to acquire basic knowledge, understanding and problem solving skills before they can solve problems through applying skills learned in a familiar context. The students are provided with a foundation which will enable them to solve problems at later stages of learning. The three categories presented by Killen (2010) identifies an important first stage to problem solving which is relevant and appropriate to a first semester, first year teaching strategy. It was therefore considered important to pay particular attention to the basic skills that are incorporated in the project and to ensure that these skills are mastered by all the students.

An integrated and interactive teaching strategy

Literature revealed that Interior Design academics at the Queensland University of Technology in Australia were also faced with the challenges of addressing an appropriate teaching strategy for the

interior design environment. Smith, Hedley and Molloy (2009) developed a reflective model for the teaching of Interior Design in an attempt to deliver core content more effectively and address the challenges and demands of a changing university context. They proposed that traditional teaching strategies should be replaced by an integrated and interactive approach. The theoretical frameworks of hermeneutics and Peirce's logic of enquiry were employed in the development of their reflective model's learning strategy (Smith *et al* 2009). This learning strategy shares an important component with the project described in this paper. The value and importance of a hermeneutical understanding is emphasised, which is achieved through exploring and interrogating parts in relation to the whole and similarly, the whole through insight into the parts. Smith et al (2009:14) explain that a hermeneutical understanding is an approach that aims to reveal conditions that facilitate understanding, whilst it takes into consideration both the learners and their context(s).

Through adopting this integrated approach as presented by Smith, Hedley and Molloy (2009), a holistic outcome between various modules could be achieved, which is considered to be essential to the success of the project. An integrated teaching strategy could furthermore demonstrate to students how the knowledge and skills acquired in the different modules could be merged to form a holistic design problem solving approach. The different tasks, completed in each module, are then deliberately integrated to remove students from developing a compartmentalised viewpoint of their different modules. Students should be encouraged to keep up with the progress of the project since late submission and poorly executed tasks impacted on their overall progress.

Introduce the element of surprise within the teaching strategy

Ludden, Schifferstein and Hekkert (2008) conducted research into the use of surprise as a design strategy in product design. They paid particular attention to the manner in which surprise is used by product designers to create original and interesting products which could evoke a pleasant, unexpected and new experience for users. Ludden *et al* (2008:28) suggest that "[t]he product user benefits from the surprise because it makes the product more interesting to interact with". These authors identified two different surprise types; namely products with Visual Novelty and products with Hidden Novelty. The Visual Novelty surprise type relates to an experience that is originally unfamiliar to the perceiver where it is not possible to make a connection based on previous experience. The Hidden Novelty type refers to an experience that seems familiar to the perceiver and as a result the perceiver has certain expectations. Through introducing a surprise element the original expectation is proven wrong and the perceiver's original expectation is altered (Ludden *et al* 2008).

Although the research conducted by Ludden *et al* (2008) relate to the experience and expectation of users that engage with new products, an important connection was identified between this design strategy and first year design teaching strategy. From a teaching and learning perspective, it is equally important to maintain the interest and focus of students, especially if a longer extended project is introduced, over various stages in the first semester of first year. It should also be noted that in the first semester the students are at varied levels of programme readiness. Students with prior art or design experience have already mastered basic art or design skills. It is equally important to maintain interest and focus for all types of learners. The second surprise type, Hidden Novelty, addresses the design expectation of both the elementary and advanced learners. The first three tasks of the project addressed familiar activities such as drawing, constructing pattern and painting. The final task of the project was not known at the outset and each task had specific outcomes that informed the next task in a surprising way. The project was revealed step by step which prevented students from pre-empting the final stage or outcome of the project. This approach further addressed the first teaching challenge described in this paper. It was not possible for students to source and incorporate unrelated images and references into the project but rather focus specifically on the task at hand.

The theme and focus of the collaborative project

Theme of the project

The theme of the collaborative project was to explore and apply the visual elements; line, tone, form and shape at a first year level in three modules namely; Design, Graphic Interpretation and Form and Colour. By sharing one project between these three first year modules, an opportunity was created for the students to understand and integrate the project's sub-components that were produced in the different modules.

Exploring and interrogating the components before assembling the whole

The entire first year project was designed to take place over one term, which is a period of eight weeks and varied between 6-9 hours contact session per week. Focus and attention was given to each task or component and aimed to prepare students for the problem solving processes that followed at a later stage. Therefore, before teaching could take place through problem solving in the second term, the students needed to develop an understanding of the design elements, composition, form, scale texture, rhythm etc. The basic knowledge in skills were incorporated in the step by step approach that was introduced into this project, which then finally contributed to assembling a three dimensional space. Focus was placed on the heuristic circle (as described by Smith *et al* 2009) in which attention is given to the parts which are used to construct a space. It was essential for students to reflect on the project after completion to ensure that the whole (completed project) was understood in relation to the parts (project tasks).

Brief description of the collaborative project

The project comprised a variety of different tasks that were executed within the different modules. The third year Industrial Design students observed the first year design development process to enable them to source surface elements from the first year designs that were to be introduced into their third year design project.

Task 1: Execute a line drawing of an interior

The first task was performed in the first year module Design 1. Students were instructed to make a drawing, on an A3 format, using the density of lines to create the optical effect of tone. To enable a precise effect students used a black fine liner for this drawing. In addition, students were requested to study examples of engravings and etchings executed by Durer, Rembrandt and Goya and observe the manner in which line is used to create a dramatic optical effect of tone and atmosphere.

The stimulus was a photograph, identified by the each student, of an interior that was selected from local interior design magazines. Students were carefully guided in the selection of a suitable interior photograph. They were asked to identify interior images with a variety of tones, from dark to light, and with interesting detail. The students were encouraged to analyze the photograph and when starting the drawing, to build lines to create areas of tone (see figure 1). At the end of this task the student critiqued and assessed their success in achieving the outcomes.

Task two: Generate a repetitive geometric pattern

The second task formed part of the module, Graphic Interpretation 1. An introductory exercise to this module required of students to generate a balanced, repeat pattern. Using basic geometric shapes, students were instructed to combine these in unusual configurations in order to produce ‘new’ and unexpected patterns. The task introduced the students to the positive and negative shapes as a precursor to constructing letterforms and spaces around and between letters and perceiving words as visual units. Students explored working with shape in black and white and in so doing, came to see how visual relationships, rhythm and repetition of appropriately scaled motifs to a designated format, can produce visually exciting patterns. Whilst the results constituted discernable patterns, the intention was for students to reduce and incorporate these patterns at a later stage of the project in their final designs (see figure 2). At this point however, students were unaware of the final application of the pattern generated in this exercise.

The outcome of this task was taken further in the module, Form and Colour 1. Logistically the continuation of the task was made possible because the same lecturer presented both these modules. The students explored the relationship between form, colour and pattern in an exercise. Basic geometric shapes were painted in warmer and cooler colours and positioned as either a cityscape, playground or sculpture in which the shapes advanced or receded to create depth within the design. Both the above exercises formed part of a carefully designed, scaffolded skill-based learning experience. In each module the purpose and the function of the skills were made explicit and processed individually with students and critiqued in feedback sessions.

Figure 1: Line drawing of interior space

Figure 2: Geometric pattern used as floor pattern

Task 3: Construct a three-dimensional cubic space

The first two tasks were incorporated in the final stage of the project. Up to this point the students had no prior knowledge as to how the previous tasks, the line drawing and geometric repeat pattern, would be incorporated in the final task. This teaching approach aimed to show students how to explore and search for an alternative creative solution. The planar to volumetric approach aimed to embed the understanding that a form can enclose space, thus creating an interior space. Furthermore, the students were introduced to the elements of surprise, in that unexpected results were created through the manipulation of scale and introduction of the sub-components of the previous tasks.

The students were required to make photocopies of their line drawings and repeat patterns. Sections of the photocopies were enlarged or reduced in scale. The selected reduced or enlarged copies could now be used as floor of wall covering in the cubic space. The results were unexpected and exiting. In addition, cubes, cylinders and rectangular boxes as well as flat screens were constructed to define and articulate the cubic interior space. These elements were painted in warm or cool tones of grey, to provide visual resting points against the dynamic black and white surfaces. Silhouettes of chairs, insects and motorcars were cut out from coloured paper and added to the rendered wall surfaces to introduce focal points and/or elements of contrast and interest in the design. The introduction of the silhouettes further enhanced the unexpected qualities of the interior (see figure 3).

This task made the students aware of the effect that visually active or patterned surfaces have on the scale and space of the interior. They were encouraged to photograph their modules with a cell phone or camera. The photograph was taken at eye level, cutting out any background, focusing on the space as it would be perceived by somebody entering and walking through the space. Once again the students were pleasantly surprised when they viewed the photographs. A project that started out as a line drawing and repeat pattern was morphed, collaged and shaped in a visually exciting three dimensional space. During the reflection and critique session the linking of the parts to form a whole was reinforced as an important design process that requires focus and attention throughout all design stages.

Collaboration with Department of Industrial Design

The Department of Industrial Design presented their third year students with a project to design and manufacture a slip cast ceramic water jug. Each student was required to produce a series of jugs with the same form but with different surface treatments on each jug. It was decided that the line drawings

and patterns produced by the first year students, would be used as surface embellishments for the water jugs. The idea was to source a surface embellishment that was original and effective.
The third year students observed the development of the first year project and participated through presenting critical feedback to first year students. After the observation stage the third years commenced with the design of the ceramic water jug. The involvement of the third years throughout the first year project made it easier for them to transform the first year drawing and patterns with the resultant enlargement and reduction of scale into surface transfers. Interior design lecturers were invited to participate in the critique of the designs for the jugs and also played a part in guiding students with their decisions on the selection and placement of the transfers.

The completed jugs had in common with the first year models the quality of unexpectedness and variety. The more obvious solutions that would have possibly arrived at were avoided as a result of their participation in the project. The student gained creative inspiration by considering the truly original nature of the material that they worked with (see figure 4).

Figure 3: Interior of the model

Figure 4: Selection of completed water jugs

Students' reflections on the project

Students were given the opportunity to reflect on the project by completing a questionnaire. In the first year, 45 Interior Design students (90 percent of class) took part in the reflection and 18 Industrial Design students (90 percent of class).The questionnaire presented the following three questions to the students;
Question 1: What did you learn from the project?
Question 2: Where you satisfied with the outcome of the project? Motivate your answer.
Question 3: Which aspects (stage) of the project did you enjoy most?

Learning obtained through this project

In the questionnaire a number of first year students identified that they mastered various basic skills such as drawing, painting, combining colours and building models. Two first year students communicated this as follows;

> "I learned how to use my different tools, like cutting knives and paint to create the model (Interior student 40)
>
> "I learned new methods of drawing from this project that I never thought I'll be able to accomplish (Interior student 26)

The majority of first year students emphasised that they had learned to work neatly and accurately in executing all their tasks. In addition to the basic skills that were acquired, students also identified that they had learned to be creative and professional. In contrast to the first years, the third year Industrial Design students focused on the values of collaboration and interaction in their feedback. This was identified by one student as follows;

> "Collaboration with another department gives one a different perspective on how to approach a project" (Industrial student 7).

The element of surprise was identified by both Interior Design and Industrial Design students as follows;

> I surprised myself because I didn't expect it to come out the way it did (Interior student 40).
>
> Learned that different and unexpected features can be added together to create and interior which is visually stimulating and interesting (Interior student 41).
>
> I found that the interaction with the interior design department very valuable because of the unexpected results that emerged (Industrial student 18).
>
> It [the ceramic water jug] was surprising as it looked better than I had imagined it to be (Industrial student 3).

Student satisfaction with the outcome of the project

The majority of the Interior Design students (n=23) were satisfied with the outcome of the project while eight were partially satisfied. Fourteen Interior Design students indicated that they were not satisfied with the outcome of their project. The motivation provided for their dissatisfaction displayed a level of personal dissatisfaction or disappointment with the outcome of their project. The comments show that these students were not personally satisfied with the neatness of their models and the time and effort invested in the project which impacted on the final product. Only one student in the class did not understand why the project was unsuccessful when compared to the rest of the class.

The vast majority of the Industrial Design students (n=15) were satisfied with the outcome of the project. Only two students were partially satisfied and one was very dissatisfied. All three these students indicated that they were satisfied with their projects but not pleased with the poor marks they received. The overall results indicate that the majority of the students were satisfied with the outcome of the final design.

Project stage enjoyed most

The feedback presented in the first year questionnaires identified that the majority of students enjoyed the final stage of the project most (table 1). The popularity of assembling the final model was followed by building the model and transforming the line drawing. The majority of students indicated that they had constructed a model for the first time and although the activity presented various challenges to the students, it was evident that they enjoyed the physical construction of the model. Equally enjoyable was the transformation of the line drawing into wallpaper for the cubic space.

Project stage	Observation percentage
Integrating all the components, putting model together, making a whole idea	37%
Build a model	15%
Transforming the line drawing	15%
Seeing the end result	8%
Execute the line drawing	7%
Planning the space	4%
Making the pattern	4%
Enjoyed all stages	4%
Interact with other students and get input on work	2%
Being creative and artistic	2%
Designing the parts of the projects	2%

Table 1: Stages enjoyed most during the project (Interior Design students)

The feedback presented by the Industrial Design students indicated that two different stages were enjoyed equally by students in the group. The moulding and slip casting of the project as well as the application of the surface embellishment was identified as the top two stages by students. It was also of interest to note that the third years derived value from the interaction and discussion with both students and the lecturers in the Department of Interior Design. Two students suggested that more feedback and closer interaction should have taken place with first year students to improve the design of the final product.

Project stage	Observation percentage
Slip casting the jug, making the jug	30%
Application of the graphic/surface finishes	30%
Interaction and discussion with other students and lecturers	25%
Seeing the end result	5%
Design the form of the jug	5%
Getting free reign to work with the first year line drawings	5%

Table 2: Stages enjoyed most during the project (Industrial Design students)

Conclusion

In reflecting on the student feedback and output delivered in the project it is concluded that the integrated teaching strategy was successfully implemented in the first term of the first year. The knowledge and skills introduced through the sub-components of the design project, offered students a foundation from which they could further develop their knowledge and skill base and problems solving abilities. To ensure that the positive output delivered through the project continues into further first year projects, the lecturers ensured that knowledge and skill were reinforced and thereafter further developed in following projects.

The assessments of the final project indicated that all the first year students obtained a pass mark (above 50 percent). The comments presented in the students' reflection show that students understood their shortcomings and were able to present recommendations of how they could improve their marks. The overall performance of the students assisted in building confidence especially for students without prior art or design training. The first year student reflection further indicated that a large number lacked basic skills, such as cutting cardboard, building a scale model and working with paint. Although the first project assisted in developing these basic skills it furthermore indicated to students how to continue the investigation and exploration process once the module tasks were completed.

An integrated, hermeneutically located project, such as described in this paper, provides students' with a broader more elastic scope and application for their rapidly acquired skills. The step by step approach emphasised the importance of the various stages inherent in the project and indicated that focused time and effort is required throughout a project to ensure satisfactory completion. The majority of first year students that were dissatisfied with the outcome of their projects indicated that they had not invested enough time and effort in the project. Furthermore, by placing emphasis on the components (parts) of the project the lecturers could monitor and assess the progress of each student closely and focus on their individual needs.

Building surprise elements into this project has sharpened the student's anticipation of new learning outcomes. On being presented with a new project students are more analytical of the briefs that are presented as a result of their experience. Working with students from different levels in other programmes within the Faculty generates a sense of curiosity about other design fields with their particular approached and strategies to design education. This allows them to make comparisons to their own development and enriches the work that they produce. In conclusion, this project was described by lecturers and students, from both departments, to be not only successful in meeting all the project expectations but also as an enjoyable and enriching design and teaching experience.

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