**An educational tool to encourage higher level thinking skills in the selection of images for fashion design mood boards: An action research approach**

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The primary argument of this article arises from the need identified in fashion design education within a South African context for a shift in the focus of theoretical curricula content to convert from a diploma to a degree structure. This article addresses this concern and reports on the baseline assessment of a devised and implemented tool to advance visual literacy thinking skills of undergraduate fashion design students, applied to the selection of images for mood boards. The inquiry adopted an action research design and obtained data from systematically documented reflective notes, completed student image analysis help sheets and a comparison of assessment results of mood boards created before and after the application of the tool. While assessment results indicate an improvement in the level of thinking skills of some students, surface learning was identified as an underlying challenge to address for refinement of the tool. Improved results, nevertheless, suggest that the strategic principles facilitated through the tool and the subsequent recommendations for refinement present a potential framework to underpin the visual conceptual design challenges of students for consideration in a degree structure.

**Key words:** fashion design education; higher level thinking skills, visual literacy and critical analysis; image selection; mood boards.

## 1. Introduction

Higher education in fashion design within a South African context was historically based on a predominantly vocational curriculum that focused on the practical development of fashionable clothing. Undergraduate fashion design curricula primarily comprised of what could be termed trade theory, as well as the chronology of dress within a Eurocentric historical context (Lavelle, 2013; Smal & Lavelle, 2011). In 2002, the South African Department of Education (2002) restructured higher education institutions according to government reforms. The requirements of these reforms resulted in some technical higher education institutions being merged with traditional universities. This has resulted in a number of challenges regarding curriculum development. In the context of this article, this alignment called for a re-assessment and shift of the theoretical content of fashion design curricula in order to convert from a diploma to a degree structure. Challenges encountered in a second year level module could serve as a starting point to assess student current design practice.

This article provides the baseline assessment, which forms part of a series of action research cycles that aims to improve students practice during design process. The inquiry focuses on the conceptualisation stage of the design process when problem solutions are explored through visual representation, by means of images collated in the form of mood boards (Aspelund, 2010; Cassidy, 2008). As completed products, mood boards are important instruments of communication to those involved in the design project (Aspelund, 2010; Cassidy, 2008; Faerm, 2010; Garner & McDonagh-Philp, 2001; Seivewright, 2007). Participating students were required to compile a mood board, guided by learning outcomes provided in a project brief. Two primary challenges were identified through the assessed and moderated work: 1) the students' lack of visual literacy and critical analysis skills levels applied to the selection of images for the mood board, and 2) the associated lower levels of thinking skills that were evident in students' communicated design concepts. These challenges possibly relate to surface learning that can be viewed as the tacit acceptance of new knowledge as isolated and unlinked facts that lead to a lack of deep understanding (Case & Marshall, 2004; Houghton, 2004). Deep learning on the other hand, involves critical analysis and acceptance of new

concepts and principles that promotes a deeper level of understanding in order to be able to solve problems in unfamiliar situations (ibid.). In this regard, it is argued that the conceptualisation of a mood board requires critical visual analysis skills that demand a higher order of thinking on the taxonomy, namely analysis, evaluation and synthesis, which can be associated with deep learning.

The observed challenges are informed by a review of literature concerning the following aspects: 1) the role of images in mood boards, 2) levels of design thinking and expertise, and 3) the role of visual literacy and critical analysis in the image selection process.

## 2. Literature informing the challenges

### 2.1 The role of images in mood boards

Within the context of strategic alignment with the requirements of an end user, mood board content in fashion design should comprise a purposeful collection of images that express the design concept by telling a story, creating emotion, or making an argument (Cassidy, 2008). The content should further embody visual elements of colour, line, form and shape, texture and detail that can translate into clothing designs (Faerm, 2010). As a tool of communication, the visual qualities of mood board content represent symbolic meaning that stimulates emotional reactions in viewers (Aspelund, 2010; Faerm, 2010; Garner & McDonagh-Philp, 2001; Seivewright, 2007). One can argue that this intentional compilation requires the selection of relevant images to represent a design concept.

The design concept, represented through a mood board, requires visual structure, where selected images from the print or electronic media are re-contextualised to construct new meanings (Aspelund, 2010; Faerm, 2010). In the process of configuring images together in an attempt to communicate the design concept, the individual image loses its initial meaning, as the images collectively take on a new purpose. In other words, the complete picture, rather than individual elements, is perceived by a viewer

(Aspelund, 2010). It is therefore necessary for a student to be able to select and present images that collectively communicate an intended design concept as clearly as possible for a viewer to understand and interpret.

Although image interpretation is subjective by nature, interpretation can be intentionally manipulated (Barnard, 2002; Fiore, 1997; Helmers, 2006; Rose, 2012; Van Leewen & Jewitt, 2007). From a designer's perspective, analysis skills are required to purposefully connect similarities between images so that a coherent concept is portrayed with the required focus and clarity through the mood board. This implies that students' visual literacy should be developed as a starting point.

## 2.2 Visual literacy: Critical analysis in image selection

Visual literacy is based on the notion that visual material encapsulates meaning that can be understood and uncovered through a process of critical analysis and interpretation. Bamford (2003) further relates visual literacy to the skills needed to analyse and construct meaning (interpret) from visual material. Critical viewing requires strategic consideration of images as they carry effect in the larger 'picture' (completed mood board). It is furthermore important to consider the subjective nature of visual interpretation that is influenced by an individual's personal contexts when images are analysed (Barnard, 2002; Gaimster, 2011; Helmers, 2006; Rose, 2007). Accordingly, visual literacy relates to the skills to critically analyse, interpret and evaluate several images within the context of an intended design concept for their appropriateness.

Visual literacy and critical analysis-related skills required for image selection, include the abilities to: 1) identify guiding criteria for the visual analysis, 2) critically analyse the sensory design elements of an image, 3) link plausible symbolic connotations to the sensory content (interpret), 4) draw an informed opinion and evaluate the representational relevance of an image and 5) establish sensory and symbolic connections between images and combine ideas to form a coherent design concept (synthesise). It is therefore apparent that in order for students to advance their visual literacy level, a strategic and systematic approach is required. Moreover, it is

argued that the improvement of visual literacy could encourage higher thinking levels (analysis, interpretation, evaluation and synthesis) that are required for purposeful image selection.

## 2.3 Levels of design thinking and degrees of design expertise

The roles of critical visual analysis, interpretation, evaluation and synthesis skills are particularly pertinent during the conceptualisation stage of the design process, when large numbers of images often need to be evaluated for their relevance in the process of converting the design concept as an abstract idea into visual format (Aspelund, 2010; Cassidy, 2008; Garner & McDonagh-Philp, 2001). These skills are associated with a higher order of design thinking and the level of their application can be linked to specific degrees of design expertise as identified by Dorst (2008). For example, a competent designer should be able to strategically and critically analyse, interpret, evaluate and make sensory and symbolic connections between images, in order to achieve a design intention.

At a lower level of design expertise, however, Dorst (2008) explains that novice designers typically place value on personal choice, displaying a lack of understanding that the activity of design requires a strategy to engage with various problem-solving situations. Within a design educational context, Dorst (2008) highlights the need for students to engage in situations that involve strategic choices before the final realisation of a product. These situations should facilitate techniques and methods of dealing with design activities at an early stage of development in order to effectively advance students' level of design expertise. The progress of knowledge and skills of fashion design students beyond that of novice designers can be situated in Buchanan's (1998) third-order of design thinking skills. Within this order, the importance of the development of design abilities to use images and symbolism to communicate design intention is reflected (Lavelle, 2013). Buchanan (1998) and Dorst's (2008) theories can explain a situation where students lack the application of critical and strategic thought

within a specific level of expertise and order of design thinking skills, relevant to the selection process of images for mood boards, as a starting point of concept design.

Cassidy (2008) points out that mood board creation can be a means to develop critical thinking skills and proposes three fundamental planning stages, namely: 1) search to collect a body of images that relates to a design concept, 2) select and eliminate images and 3) compile the physical boards by arranging the selected images through the application of design principles. While Cassidy's (2008) proposed stages provide a valuable foundation for the technical creation and development of mood boards, they do not provide tools to encourage critical thinking produced by higher thinking skills, which are especially relevant to purposeful image selection for mood boards.

*2.4 Implications of literature for planning of a tool to encourage higher thinking levels*

Design thinking skills only applied to solve simple design problems can encourage students to adopt a learning approach that privileges implicit knowledge accumulated through experience based on trial and error (Arnold as cited in McNeil, 2010; Houghton, 2004). From the literature presented, it seems that a subjectively-inclined approach possibly reflects a lack of fundamental visual literacy skills, which include visual analysis skills on sensory, as well as higher cognitive levels. The initial documented challenges as presented earlier in this article, informed by the literature, led to a clear research problem and objectives that needed to be achieved through an educational tool.

## 3. Research question and objectives

The following question was formulated to guide the research: How can the students' level of thinking applied to the selection of images for fashion design mood boards be improved? In response to this question, a tool was devised to encourage the development of the required thinking abilities (related to analysis, interpretation,

evaluation and synthesis) through an image selection process that is strategically aligned to learning outcomes. With this in mind, the following objectives were set:

1)  devise a tool that facilitates a purposeful selection of mood board images,

2)  implement and observe the effect of the tool by comparing assessment results of mood boards created prior to the action with those of mood boards created afterwards, supported by written justifications of image choices, and

3)  reflect on the effect of the tool by re-assessing the problem in order to offer recommendations for refinement of the tool.

### 4.  Research design and methods

This research was based on the cyclical process of an educational action research design. The research process typically involves a continuous spiral of circles that aim to introduce change and refine a following cycle of research, based on experience and reflection by the researcher (Mertler & Charles, 2010; New South Wales Department of Education and Training, 2010; Norton, 2009). This enquiry reports on the first application of an action research cycle and followed four acknowledged stages, namely: planning (presented in the introduction and literature review), acting (devising and implementing a tool), observing and finally reflecting upon the effect of the action in order to suggest recommendations for refinement of the tool for a next application of a research cycle. The action research cycle diagram provided by the New South Wales Department of Education and Training (2010, p.3), adapted for this inquiry, illustrates this process and is presented as Figure 1.

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### 4.1 Ethics and data collection

Second year fashion design students were invited to participate in the enquiry and were informed about the research intention of the action so that students were given the

choice to participate or to withdraw. Students were also made aware that they would stay anonymous in observations and notes made in a teaching journal. Fourteen out of a group of eighteen students participated in the enquiry that was implemented in visual analysis workshop. Ethical requirements were met by acquiring written permission from the relevant institutional research committee to proceed with the enquiry. Reporting of general trends in assessment results of mood boards was permitted by the committee. Observations and reflections documented in a teaching journal involved interpretation of the lecturer as the researcher of events and only the most common observations, with no references to specific students, are reported in this article.

Primary data was obtained from three sources, namely: 1) a teaching journal containing systematically recorded observational notes, initial thoughts and later reflections, as well as notes "made to self" during debriefing sessions throughout the research process to discuss and confirm interpretations and observational reflections with a peer who is regarded as an expert in aesthetics and fashion design processes and who has extensive experience in degree structures, 2) moderated assessment results of mood boards created before and again after the action and 3) written justifications of image choices made by students on image analysis help sheets (documented as part of the implementation of the tool).

### 4.2 Data analysis

Munro (2014) recommends a teaching journal as a qualitative method for generating valid evidence to facilitate reflections as they emerge from the evidence and initial ideas of the researcher (in this case a lecturer). After observations were recorded during a workshop, initial ideas and reflections were generated through a conscious application of triangulation between the empirical (observations), the analytical (analysing the relevant themes emerging from the evidence) and the theoretical components (validated through literature and peer debriefing) (Munro, 2014). Content analysis was applied to identify themes that emerged from the raw data in the teaching journal. Recurring information was identified and later interpreted by drawing on relevant literature and

peer debriefing. The primary themes that emerged are outlined and reflected upon in Table 3 as part of the findings section of this article.

Mood board assessment results conducted prior to and after the implementation of the tool during the workshop were considered as valuable data. The assessment of mood boards created after the action included consideration of student's completed image analysis help sheets that provided justification of the chosen images. The documentation on the help sheets indicated the level of engagement with the process, in order to determine if there seems to be a connection between the depth of analysis recordings and assessment results of mood boards created after the intervention (aimed at improving students' abilities to create a mood board that expresses a coherent and focused design concept that embraces higher thinking levels). Class averages before and again after the intervention were calculated and the standard deviation of the averages obtained from the square root of the variants of the data (Wegner, 2007). This was done to determine how far the individual results of the students deviate from the averages.

### 4.3 Ensuring the quality of the data

Strategies were implemented to ensure that the qualitative data and final reflections generated in the inquiry and presented in this article are credible, dependable and confirmable. The measures taken include: 1) creating a clear audit trail through systematically and thoroughly documented observations in a teaching journal throughout the research process, student mood board assessment sheets and completed student image analysis help sheets, 2) to ensure that objective unbiased views are reflected, mood board and image analysis help sheets assessment results with observations were confirmed through debriefing discussions with an expert, 3) observations and reflections were further supported with literature from various recognised disciplinary sources (Babbie & Mouton, 2003; De Vos, 2003; Munro, 2014).

## 5.  Acting: Devising and implementing the tool

The devised tool is based on principles and practices of established visual analysis methods (Barnard, 2002; Gaimster, 2011; Helmers, 2006; Rose, 2007; 2012; Van Leewen & Jewitt, 2007). The identified challenges relating to levels of visual literacy thinking skills that students experienced prior to the implementation of the tool, indicated that surface learning could be occurring. Strategies were therefore incorporated into the tool to encourage deep learning and the development of specific thinking skills during the image analysis process. In this regard, the tool includes the facilitation of five phases of visual analysis that are laddered in complexity (Lien & Goldenberg, 2012). The process with the various phases is presented in Table 1. The tool is further supported by image analysis help sheets for students to complete of activities that ladders and links the required level of thinking skills. A condensed version of the help sheet is presented in Table 2. The visual analysis tool applied to guide the image selection process for mood boards was implemented in a five hour workshop.

Participating students were informed of the date and venue of the visual analysis workshop and presented with a project brief with learning outcomes relating to the creation of a mood board that portrays a specified design concept, prior to the session. In preparation, students were required to select six images that they considered to represent the provided design concept, for analysis. The workshop commenced with a verbal explanation of the visual analysis process and intentional progression of the levels of analysis in language familiar to students. Students were encouraged to ask questions and to take personal notes to support their understanding of the terminology and what was expected of them. This discussion was followed by a practical demonstration of the application of the tool. Before students commenced, it was emphasised that all aspects of the analysis help sheets should be completed before conducting the final image selection, and the sheets with the images submitted at the end of the workshop. Although being available throughout the session for assistance, students were encouraged to work independently to demonstrate the effectiveness of the tool as a guiding factor. Significant insights were documented in a teaching journal of

student's actions while they were busy for later analysis and reflection, to consider for refinement of a next application of a research cycle.

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**6. Observing and reflecting on the effect of the tool**

Students compiled the mood boards of images they selected on another day that was not part of the application of the tool. The final moderated percentages and class averages of the completed mood boards before and after the implementation of the tool are illustrated in Table 3 with specific reference to the learning outcomes of mood board creation and the related level of thinking skills to be applied during the selection process.

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The above table demonstrates that the group average of the final scores achieved after the implementation of the tool did improve, but the deviation from the average also increased slightly, by approximately 1%. The findings further suggest that a larger dispersion between the averages occurred after the implementation of the tool. This implies that the tool was more effective to some students than to others, even causing confusion, which resulted in similar or lower marks for these students. It is therefore necessary to reflect on possible reasons why the tool was not effective to all students in order to refine the tool and so enhance its usefulness to more students.

The qualitative evidence provided in Table 4 presents significant excerpts of observations documented in a teaching journal on the effect of the implementation of the tool to improve students' level of thinking skills during the image selection process in order to encourage strategic choices that represent a design concept clearly. These interpretations were based on the comparison of assessment results of mood boards created prior and again after the application of the tool, supported by evidence of student's responses on the completed image analysis help sheets.

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## 7. Final reflections and recommendations

The reflections (findings) of this inquiry indicate that students whose work improved demonstrated an understanding of the introduced analysis process as a strategic tool to achieve the expected learning outcomes of a project. By recognising this connection, students seemed able to adopt a more critical viewing approach. Documentation on image analysis help sheets suggest a link between clearly identified guiding criteria and improved sensory and symbolic focus of design concepts on completed mood boards. Understanding the informing criteria seemed to enable students to analyse and interpret the sensory image content more strategically to achieve the learning outcomes. Reflections further suggest that by applying strategic and careful thought to each phase of the process, more effective connections and combining of ideas (synthesis) could be made in the final stage to form a coherent and focused design concept. Improved focus and coherence of mood boards indicate a deeper level of learning engagement that advances the level of design thinking abilities as a student starts to respond to design problems by thinking strategically (Dorst, 2011).

The cases where no improvement in the focus of visual expression were evident, indicate that students did not push beyond a superficial level of engagement to fully understand and apply the introduced approach of critical visual analysis to achieve the learning outcomes and their design intention. Work that did not improve often

expressed incoherent design concepts, especially pertaining to cohesive symbolic meaning in relation to the sensory elements of the images. This highlights three related possibilities: 1) the project brief was not recognised as the informing factor of the analysis and selection process, 2) therefore, the guiding criteria were not clearly identified on the image analysis help sheets, 3) poorly identified guiding criteria often resulted in uninformed image analysis and choices based on personal preference rather than strategic alignment to the requirements. The inability to apply strategic thought to the image selection process to achieve the expected requirements reflect a lower order of design thinking abilities (Buchanan, 1998) and level of design expertise (Dorst, 2008; Dorst, 2011). This further suggests continuation of surface learning that can have a negative effect on the abilities to adopt and apply new knowledge effectively (Case & Marshall, 2004). The required shift to a more critical and purposeful approach, requiring advanced and strategic thinking abilities evidently posed benefits and challenges for students to contend with.

Reflections indicate that achieving the expected learning outcomes through an unfamiliar approach may have presented a challenge and degree of risk to students, in terms of fear of failure to attain what is expected and consequently obtaining poor assessment results, or discomfort and insecurity associated with acquiring and applying new knowledge (Case & Marshall, 2004; Houghton, 2004). On the other hand, the facilitated tool has created awareness of the advantages of strategic image selection, which was evident in the improved mood board results obtained by some students following the action. Nevertheless, surface learning was identified as a continuing underlying challenge to address for refinement of the tool. Following are some recommended deep learning strategies to be considered for future implementation.

Principles of laddering were incorporated into the facilitated tool as a means to elevate thinking levels and to achieve the learning outcomes (Lien & Goldenberg, 2012). However, reflections suggest that further laddering is advisable to enhance and link activities more effectively. In this regard, it is recommended to increase the exposure to the process over more than one sessions to allow students time for reflection. Furthermore, a pre-phase could be included that request students to analyse a

few existing mood boards informally as a group, with the lecturer guiding the discussion. Within this context students should explain the visual content of the mood board to each other and the lecturer and give their opinions. In order to support the identification of a pattern or trend in the images that links to a design concept, the following three questions can be included on the image analysis helps at the end after the image rating scale: 1) what do you see as the recurring theme/idea when you look at all the images?, 2) what does this mean to you? and 3) what do you think it will mean to viewers? To acquire deeper insights for further development of the tool it would be beneficial to obtain student's opinions through follow-up interviews regarding the usefulness of the tool to them.

In conclusion, the strategic approach facilitated in this article with the provided recommendations for refinement presents an opportunity for further development and a possibility for transferability of the inquiry to interested fashion design educators to pursue and adapt to their situations. Lastly, the presented visual analysis tool provides a foundation and potential framework to underpin the conceptual design challenges of students relating to higher level visual literacy abilities, for consideration in fashion design degree curricula.

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Table 1. The devised tool introduced to facilitate the attainment of learning outcomes and ladder the level of thinking skills for image selection

| Five phase process for intentional image selection | Learning outcomes<br><br>Students should be able to: | Strategy included in the tool to facilitate attainment of learning outcomes and appropriate level of thinking skills | Level of thinking skills (with reference to Bloom's revised taxonomy) (Anderson & Krathwohl, 2001) |
|---|---|---|---|
| **Identify, list and describe the principles that inform the process with regard to:**<br>a) The required sensory/physical design elements that the images need to contain with regards to: colour, form, shape, texture and detailing.<br><br>b) Symbolic meaning/s that the physical elements should represent. | Identify and list the relevant principles that the images should contain on a physical (sensory) level linked to a specified consumer and intended design concept.<br><br>List and describe the principles that the images should contain on a symbolic level with regards to the intended meaning of the design concept. | Project brief with requirements and expected learning outcomes. Analysis help sheets with a list of the five phases of image selection to guide the visual analysis of images and critical documentation. Design principles from previous learning. A brainstorming technique in order to support the documentation of principles that represent the sensory and symbolic requirements that align to the design concept. | Knowledge comprehension and application |
| **Analyse and record the physical content of an image:**<br>Critically analyse and record the structure of images according to the design elements. | Analyse and record the physical design elements of images with regard to their appropriateness to represent the specified design concept. | Provided image analysis help sheets. | Analysis and interpretation |
| **Attach meaning (symbolism) to the physical image content:**<br><br>Advance the factual analysis of the individual design elements in an image to an interpretive level with regard to possible symbolic meanings. | Interpret the physical image content by attaching symbolic meanings to it. | Image analysis help sheets that stimulate opinion forming with a table that facilitates a systematic breakdown of the physical content of images in one column and possible meanings the content carries in another column, as well as the reasoning for this opinion in a third column. | |
| **Evaluate the representational relevance of an image:**<br>Critically evaluate the representational relevance of an image in terms of its physical | Critically evaluate the relevance of an image with regard to the physical and symbolic qualities against the guiding principles. | Four-scale representational descriptions to indicate the level of relevance of an image to represent the design concept are provided for students to complete. | Evaluation |

| | | | |
|---|---|---|---|
| and symbolic qualities against the guiding principles (identified in the first phase). | | | |
| **Synthesise the analysis:** Establish connections between images by identifying similarities and contradictions. | Establish physical and symbolic similarities and connections between images and combine ideas on the analysis to form a coherent and focussed design concept. | Line spaces are provided below the symbolic evaluation section with an instruction: "Write down one connecting physical and one connecting symbolic aspect between all the images". | Synthesis |

Table 2. Condensed version of the image analysis help sheet provided to students

| **Student name:** | |
|---|---|
| **Identify the criteria for the visual analysis:** | |
| **1a) Identify and list the sensory design elements of the intended design concept that you are looking for in the images in terms of:**<br><br>Image subject:<br><br>Colours:<br><br>Lines:<br><br>Forms and shapes:<br><br>Texture and detail: | **1b) List and describe symbolic elements of the intended design concept that you are looking for in the images:** |
| **Image number:** | **Attach the image here:** |
| **2) Carefully analyse and describe the sensory content of an image:**<br><br>Image subject:<br><br>Colours:<br><br>Lines:<br><br>Forms and shapes:<br><br>Texture and detail: | **3) Interpret the analysis of the sensory elements of an image and link possible symbolic meanings to the content:** |
| **4) Evaluate and rate the relevance of each image:**<br><br>Based the above analysis, use the four-scale descriptions below to evaluate and rate the representational relevance of an image against the identified analysis criteria.<br><br>**Encircle/highlight the relevant choice:**<br><br>1.    Not relevant at all - the image needs to be excluded.<br>2.    Several aspects are not relevant - the image needs to be excluded.<br>3.    Most aspects relate – the image can remain for final consideration.<br>4.    Excellent representational relevance – the image is a definite choice. | |

Table 3. Comparison of mood board assessment results with reference to the related
level of thinking skills

| Learning outcomes<br><br>Students should be able to create mood boards that demonstrate their abilities to: | Related level of thinking skills (with reference to Bloom's revised taxonomy) (Anderson & Krathwohl, 2001) | Number of students with final mood board score % prior to implementation of tool | Number of students with final mood board score % after implementation of tool |
|---|---|---|---|
| Identify, understand and meet project requirements and learning outcomes | Identification, comprehension and application | Percentage intervals:<br><br>40%-44%: 0 students | Percentage intervals:<br><br>40%-44%: 0 students |
| Analyse the sensory design elements of images and interpret possible symbolic meanings in relation to an intended design concept. | Analysis and interpretation | 45%-49%: 1 student<br><br>50%-54%: 1 student<br><br>55%-59%: 6 students | 45%-49%: 0 students<br><br>50%-54%: 1 student<br><br>55%-59%: 5 students |
| Critically evaluate the sensory and symbolic relevance of images against the guiding analysis criteria. | Evaluation | 60%-64%: 2 students<br><br>65%-69%: 2 students<br><br>70%-74%: 2 students | 60%-64%: 1 student<br><br>65%-69%: 3 students<br><br>70%-74%: 2 students |
| Form sensory and symbolic connections between images and combine ideas on the analysis to form a coherent and focused design concept. | Synthesis | 75%-79%: 0 students<br><br>80%-84%: 0 students<br><br><br>Total students: 14 | 75%-79%: 2 students<br><br>80%-84%: 0 students<br><br><br>Total students: 14 |
| | Class averages: | 60,29% | 63,5% |

Table 4. Observations on the effects of the tool

| Related level of thinking skills (Bloom's revised taxonomy) (Anderson & Krathwohl, 2001) | Most important excerpts of observations on the effect of the tool as documented in a teaching journal (based on the comparison of assessment results prior and after implementation of the tool) | Most important supportive evidence from student's documentation on image analysis help sheets |
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| **Comprehension identification and application**<br><br>(Understanding the working principles of the tool and meeting project requirements and learning outcomes (application) | Positive aspects: … '*the awareness created through the working principles of the tool may have resulted in some mood boards demonstrating improved clarity, coherence and relevance of the expressed design concept'.*<br><br>Negative aspects: …'*mood boards lacking the necessary focus and relevance, could imply that students did not understand the project brief to be the guiding factor and the facilitated image selection process a strategic tool to achieve project requirements and learning outcomes'.* | Slightly above a quarter of students provided adequate information in all or most aspects of their analysis.<br><br>More than half the students did not clearly identify the sensory and symbolic criteria for the analysis (obtained from project brief).<br>Although almost a third of students presented acceptable descriptions of the sensory image content, limited symbolic interpretation was provided.<br>Nearly three quarters of students presented short, often incomplete sentences with limited depth, or left sections blank.<br>Nearly three quarters of students either left the rating scales blank, or only completed for some images.<br>The lack of documentation supports the interpretation that some students may not have understood the strategic intentions and application of the tool. |
| **Analysis and interpretation**<br><br>(Analysis and symbolic interpretation of the sensory image content in relation to the intended design concept) | Positive aspects: Analytical skills: …'*it seems as though students whose work improved, formed opinions and made choices by first ordering the required common sensory and symbolic aspects that needed to be identified and connected in the images'.*<br><br>Coherence and clarity: ... '*class averages indicate some improvement in the ability to communicate the sensory (design) elements of a design concept clearly and coherently'.*<br><br>Negative aspects*: ... 'expressing symbolic meaning of sensory content coherently and in a convincing manner for a viewer to understand seems a continuing challenge, particularly to students whose work did not improve'.* | Less than half the students adequately identified the sensory and symbolic criteria of the analysis.<br><br>Students whose work improved often used confident statements such as '*I think…*' or '*the smooth surface of the shell represents…*'. Using the word 'represents' further indicates the ability to make symbolic interpretations.<br><br>More than half the students provided limited and/or incoherent descriptions of symbolic image interpretations. |

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| **Evaluation**<br><br>(Critical evaluation of the sensory and symbolic relevance of images to express an intended design concept) | Positive aspects: Opinion forming and critical evaluation: …'*assessment results indicate slight improvement of the relevance of mood board content to express a design concept, suggesting that judgements of images were made from an informed point of view*'.<br><br>Negative aspects*: …'image choices of mood boards that showed no improvement often reflect uninformed selection and personal preferences*'. | Less than a quarter of students completed all or most of the analysis sections and then formed opinions regarding the representational relevance of an image, by making a selection on the rating scales for all six images.<br><br>Approximately three quarters of students did not complete a relevance rating for all images, or left the rating sections blank. During the workshop, some students indicated that they were unsure of how to form their opinions, despite probing to assist them. |
| **Synthesis**<br><br>(Establishing sensory and symbolic connections between images and combining ideas and tasks on the analysis to form a coherent and focussed design concept) | Positive aspects: Making sensory connections: ... '*class averages suggest an improvement in the ability to make connections between images on a sensory level, resulting in mood boards that express the design elements of the intended design concept more coherently*'.<br><br>Negative aspects: Mood boards that did not improve demonstrate: …'*a lack of the ability to make deeper interpretation and complex connections*'.<br>…'*that links between the sensory and symbolic meanings are not integrated*'.<br>...'*many disconnections between ideas*'.<br>...'*a challenge of translating a mental idea into a visual format that viewers can clearly understand on sensory and symbolic level as the student intended*'. | More than half the students provided satisfactory descriptions of the sensory content of images in relation to the intended design concept.<br><br><br><br>Almost three quarters of students lacked adequate descriptions of deeper interpretation and integration of the design concept as a whole. |
| **Surface learning**<br><br>(Lack of deep understanding and engagement) | Engaging with the learning material and process: …'*some students seem to complete the project simply to get it done, focussing on achieving the baseline requirements only*'.<br><br>Internal locus of control: …'*it appears as though some students do not take control of their own learning experience and fully engage and commit to the required tasks*'.<br><br>Making connections: …'*viewing the various aspects of the process in isolation, failing to recognise the more complex connections of the whole in terms of: 1) the project requirements and intended design concept as the guiding factors of the image analysis process, 2) linking convincing symbolic meanings to sensory image content, 3) integrating sensory and symbolic connections between images to express a coherent design concept*'. | The challenges highlighted in the above sections indicate that students need to engage more deeply to fully understand the working principles of the visual analysis tool and its application to strategically search for deeper symbolic meanings and connections, in order to express a design concept clearly and coherently as the student intended. |
| **Deep learning**<br><br>(Deeper understanding and engagement) | Working with a deeper understanding, engagement and determination to improve work: … '*it appears as if students who have created mood boards that communicate the design concept on a more complex coherent level, worked consciously to understand the principles of the tool and were able to apply the new knowledge in an unfamiliar context*'. | The positive aspects mentioned in the sections above, suggest a deeper understanding of the visual analysis tool and its application, as well as an ability to link concepts and principles strategically to search more effectively for connecting aspects in images relevant to an intended design concept. |

Figure 1. The action research cycle followed in this enquiry (Adapted from New South Wales Department of Education and Training (2010, p.3)