

The expectations-reality interface: Visual literacy levels, predominant learning modalities and preferences among first year design students

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Session Outline:

Whole group discussion ice breaker (5 mins):

Information gathering exercise to identify participants' knowledge of visual literacy levels and predominant learning styles among first year students.

Paired discussion (10 mins):

1. Participants complete a learning style questionnaire and identify their own predominant learning style.
2. Participants consider the impact that different learning styles may have on the learning process for first year students.
3. Participants consider the impact that different learning styles may have on teaching strategies for first year students.

Presenters + Whole group discussion (10 mins):

The presenters provide a short description of the findings from a recent research study conducted at COFA in regard to predominant learning modality, visual literacy levels and student preferences for lecture format and visual teaching materials. Whole group discussion regarding the relevance of visual literacy levels, predominant learning styles and student preferences for lecture format and visual teaching materials.

Abstract

Is there a mismatch between students' visual literacy levels and teacher expectations of visual literacy? Do we as educators assume that design students are predominantly visual learners? Should educators consider student preferences for visual materials and lecture format? A recent research study identified some surprising results in regard to first year design students' visual literacy levels, learning modalities and preferences for lecture format and supporting visual. These findings suggest that the key to encouraging student understanding of design history may rest on the teacher's abilities to understand students' visual literacy levels, individual learning styles and preferences, and adjust teaching methods and the use of visuals accordingly.

Introduction

Anecdotal evidence suggests that there are mixed expectations in higher education regarding first year design students, particularly in respect to their visual literacy levels, predominant learning modalities and preferences about lecture format and visual teaching materials. However, a recent research study indicated that visual literacy levels are not as expected; or that learning modality is not necessarily predominantly visual among first year design students. In addition, student preferences for lecture format and visual teaching materials also vary in respect to expectations. These suggest that teachers of first year design students may need to adjust their teaching methods and the use of visual teaching materials.

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Recent research: Aims, design and findings

A recent research study investigated visual literacy levels of first year undergraduate design students. In addition, predominant learning modalities among this cohort were also investigated along with their preferences for lecture format and visual teaching materials.

Previous studies found that novice design students experience difficulty in identifying visual elements frequently linked to prototypical images of design styles (Rourke & O'Connor, 2009a, 2009b, In press). While a preponderance of visually inclined learners seems a reasonable assumption, previous studies indicate that 41% of first year undergraduate design students identified themselves as visual learners; 34% as kinaesthetic learners and 25% as auditory learners (Rourke & O'Connor, 2009a, 2009b, In press). In addition, first year design students' preferences were not known in respect to lecture format and visual teaching materials.

Qualitative procedures (specifically the F-sort and Q-sort procedures plus a questionnaire) coupled with qualitative analysis were used in this research study. Given that three tests were administered, the tests were selected on the basis of brevity to avoid participant fatigue and the impact this may have in terms of internal reliability.

To assess predominant learning modality, the VAK test was applied to determine students' strengths and weaknesses in relation to visual, auditory and kinaesthetic modalities (Chislett & Chapman, 2005). This test rests on the notion that students have a preferred way of gathering and cognitively organising information. Visual learners prefer pictures, diagrams charts and other visually-based methods to absorb information; aural learners prefer learning new information via verbal explanations, lectures and discussions; while kinaesthetic learners prefer a hands-on approach that involves using their physicality and senses to absorb information.

To assess visual literacy levels, two procedures devised for previous studies were applied. The first of these, the Q-sort technique, elicits perceptions and judgments of a subjective nature by directing participants to sort visual stimuli using categories defined by the researcher (Amin, 2000; Stephenson, 1953). The second procedure, the F-sort technique, allows participants to define their own categories without direction from the researcher when sorting visual stimuli (Miller, Wiley, & Wolfe, 1986). These procedures combine a qualitative approach with quantitative data analysis and are considered an effective tool for capturing patterns of subjective responses to a set of visual stimuli (Amin, 2000; Brown, 1986).

Visual stimuli used to assess visual literacy levels were subject to a stringent visual stimulus sampling process devised in previous studies and which followed procedures discussed in the literature (Schroeder, 1988). A large set of digital photographs representing prototypical images of design style (Art Nouveau, the Arts and Crafts movement, Art Deco and Bauhaus) was sourced as per the literature (Solso, 2003; Szabo, Dwyer, & De Melo, 1981). The nominal group consensus method was used to determine prototypicality as described in the literature wherein a group of people considered to have relevant knowledge specific to the research aims selects relevant images (Campbell & Cantrill, 2001; Keeney, Hasson, & McKenna, 2001). The nominal group represented by the two primary researchers of this study selected a final set of 12 images for use on the Q-sort and F-sort procedures.

In terms of procedure, all participants in this study were provided with a questionnaire and a set of visual stimuli in a well-lit classroom setting and directed to self-administer the survey (Questionnaire with 'Participant Information'; 'F-sort' activity and 'Q-sort' activity) under the supervision of the researchers. The F-sort task required participants to sort the visual

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stimuli and arrange them into groupings of their own choice. Once sorted, participants were then required to record the code numbers of the visual stimuli under category headings that they had devised. The Q-sort task required students to sort the visual stimuli again and group them under the headings of *Arts and Crafts movement*, *Art Nouveau*, *Art Deco* and *Bauhaus*.

In terms of participants and sample size, two cohorts participated: Cohort (A): 178 first year design students from the College of Fine Art (UNSW) who were tested in the first week of first semester (2008). Cohort (B): 118 first year design students (COFA, UNSW) who were tested in the last week of first semester (2009). Of the 296 sample group, 77.7%: 17-20 years; 20.6%: 21-30 years; and 1.7%: aged 30 or more; 76.4%: female and 23.6%: male.

In terms of results for the F-sort task, half the participant group (50.8%) grouped the images according to simplistic object type categories: “building”, “textile” and “furniture”. Of the remainder, 12.7% grouped the images into the exact historical design categories as determined by this study; and an equal number of participants (12.7%) grouped the images into un-named categories. A smaller proportion (11.9%) sorted the images using general (but not design-related) categories: “Clean texture, Busy texture”, or “Patterns, Geometric, Organic”; while 5.9% sorted the images using design-related category descriptors such as “Modern, Victorian”; 3.5% sorted the images using a large range of multiple categories; and 2.5% using colour-specific categories.

In the Q-sort task, the impact of teaching intervention appeared positive as per Table 1.

Table 1. Q-sort scores

	Nil	1 of 4	2 of 4	3 of 4	All 4 correct
Before teaching intervention	57.3%	21.3%	10.7%	3.4%	5.6%
After teaching intervention	27.1%	22.0%	26.3%	11.0%	13.6%

In terms of predominant learning modality, the results depicted in Figure 1 indicate that while visual learners are relatively predominant, kinaesthetic learners represent about a third; and auditory learners represent 10-25% of the sample group of first year design students.

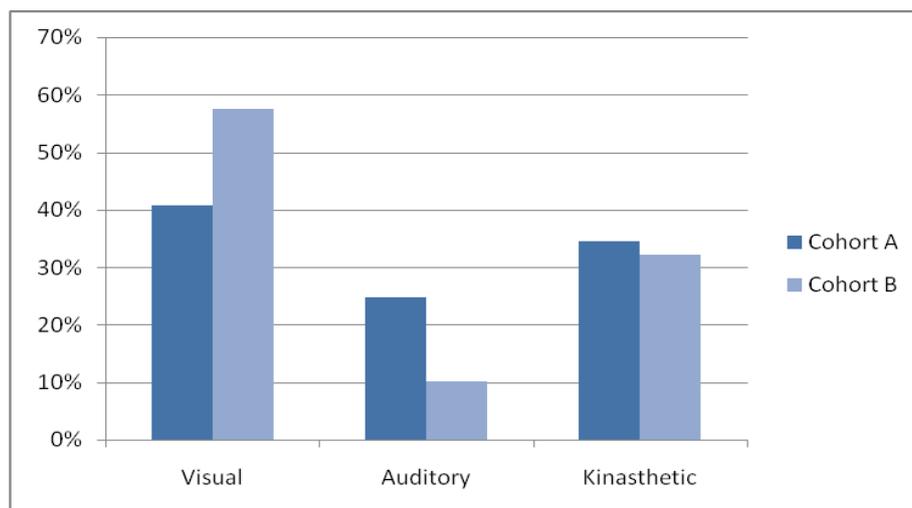


Figure 1. Differences in predominant learning modality between Cohort A and B.

In reference to student preferences for visual teach materials, participants indicated that they preferred to see an average of 20-30 images per lecture. In regard to lecture structure, 89% preferred 2-hour lectures (89%); 41.5% preferred a structured lecture with links to visual examples and 34.7% preferred PowerPoint presentations with visuals and text. In addition, 46% preferred visual examples coupled with detailed discussion by the lecturer and 41.5% preferred visual examples that were compared and contrasted by the lecturer. A large proportion (64%) preferred to have relevant features in visual examples pointed out by lecturers. Finally, while 69% indicated that they had the ability to recognise visual examples when shown them again, this wasn't supported by the findings of Q-sort task discussed above.

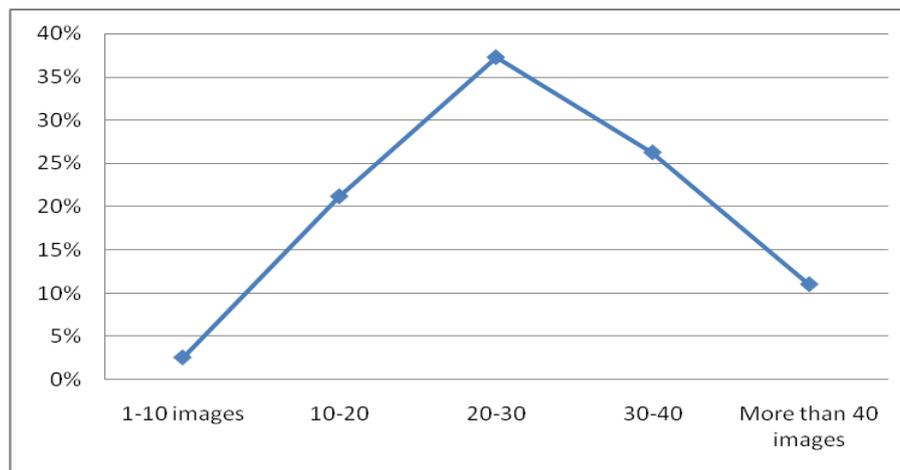


Figure 2. Preferences for visual teaching materials among first year students.

General discussion and research conclusions

These findings indicate that a mismatch exists between educators and first year design students in a number of areas. Visual literacy levels were found to be generally lower than anticipated; however, one of the limitations of this study was that it was difficult to gauge the extent of teaching intervention.

In addition, variations occurred in terms of predominant learning modalities among students. This highlights the importance that educators acknowledge these differences in predominant learning modality and vary their teaching methods accordingly. It should be noted also that the high proportion of kinaesthetic learners (32.2% to 34.5%) suggests that more 'hands-on' activities should be included in lectures and tutorials to suit the learning style of this group.

Furthermore, the findings in respect to student preferences for lecture format and visual teaching materials indicate that students prefer educators spending time in a lecture analysing and describing visual examples in detail.

The above findings support changes in teaching methods used to teach design history to first year students. Understanding students learning styles, visual literacy skills and ability to recognize design styles will also assist towards planning a more learner-centred curriculum and it is important that as educators we take into account students' perspective of the learning process and adjust our teaching methods accordingly.

Issues and initiatives

The findings discussed above raise some relevant issues for teaching first year students. Specifically, to what extent is predominant learning modality relevant? Does the relevance of predominant learning modality vary across different disciplines? Should we as educators take into account student preferences for lecture format and the quantity of visual teaching materials?

In terms of initiatives, the research discussed above provides some indication of predominant learning modality among first year design students. Given the variations reported herein, it is suggested that a need exists to extend the research to a more thorough investigation of predominant learning modality in an extended study across a large range of disciplines.

Secondly, it is suggested that further research is conducted to investigate the link between student preferences in terms of lecture structure and visual teaching materials; and student learning outcomes to ascertain whether the meeting of student preferences results in improved learning outcomes.

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