Visual learning and graphic design: a cooperative strategy

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Abstract

The article discusses an exploratory study implemented at three campuses of the Vaal University of Technology, Vanderbijlpark, in response to weak examination results in one of the subjects in the graphic design curriculum. The aim of the study was to investigate the feasibility of utilising a combination of visual learning and cooperative learning strategies in this setting. A comparative assessment methodologies framework was utilised to measure how graphic design first-year learners experience these. The results suggest that although the learners enjoyed and saw value in some aspects of the visual learning and cooperative learning strategies, a combination was seen as disruptive to the learning environment and is thus unlikely to lead to a significant improvement in examination results in the long term.

INTRODUCTION

Graphic design education has been a part of the South African higher education sector for many years. At the Vaal University of Technology (VUT), as in other institutions of higher learning in South Africa, the relatively low skills base of most entry level learners, the comparatively high expense of graphic design education, and the high expectations of industry remain challenges that need to be addressed in both the practical and the theoretical learning components of the graphic design offerings (Sutherland

2004). However, as McCoy (1998, 9) argues, the benefits of graduate and post-graduate programmes in graphic design include that they 'challenge learners to look deeply into the discipline and into themselves to connect design to its culture, its history, its users, its society, and its technology'.

At VUT, the subject History of Art and Design 1, which forms part of the broader curriculum for graphic design learners, has been plagued by weak examination results, which have been affecting the overall performance of the learners negatively. The subsequent low throughput rate raises the question whether the current teaching methodologies are of optimal benefit to the learners, or whether alternative teaching methodologies such as visual learning and cooperative learning would be better options. A visual learner may be defined as someone who, in a visual sense, views a system as a whole rather than analysing it in terms of disparate elements. The term 'cooperative learning' refers to a set of step-by-step methods which help learners to interact together in order to accomplish a given task or develop a clearly defined end product.

The learners at VUT come from diverse cultural and socio-economic backgrounds. Common challenges include a lack of basic art history knowledge (history as a school subject not being a pre-requisite for the course), inadequate language proficiency (English is the language of instruction at VUT, but seldom the mother tongue of the learners), and a lack of awareness of how the theory and practical subjects of the offering relate to each other. A recent survey conducted by the Pan South African Language Board, for example, found that nationally only 22 per cent of African language speakers are 'functionally proficient' in English (Brand 2003, 28).

This article discusses an exploratory study that was undertaken at three campuses of the VUT in response to the weak examination results in the subject History of Art and Design 1. The aim of the study was to investigate the feasibility of utilising visual learning and cooperative learning strategies in combination with each other in order to measure how first-year learners in graphic design experience visual learning strategies, cooperative learning strategies, and the combination of these.

The literature review covers (1) a review of the fundamentals of visual learning, including the concepts of visual literacy, visual semiotics and visual culture; (2) a review of trends in graphic design education, especially in South Africa; and (3) a review of the principles of cooperative learning. While the respective strengths and weaknesses of visual learning and cooperative learning are well described in the higher education literature (Avenant 1989; Behrens 1998; Markel 1998), theoretical literature regarding the combination of these two approaches is sparse. This article thus also indirectly aims to contribute to – and possibly to extend – theory by discussing some of the issues encountered as well as the outcomes reached when these two approaches were applied concomitantly in a higher education setting.

GRAPHIC DESIGN EDUCATION

Graphic design has been an established discipline at institutions of higher learning in

the United States and Europe since the 1950s and has been popular at South African institutions since the 1970s. More recently, design subjects account for increasingly high proportions of learner enrolment. According to McCoy (1998) and Swanson (1998), professional practice has always been regarded as the first priority of professional development in graphic design.

The slow acceptance of graphic design as a distinct discipline (McCoy 1998) with research as an intrinsic part of it (Noble and Bestley 2005) may have contributed to erroneous perception about graphic design as a discipline. Inadequately prepared graphic design programmes impact negatively on the further development of graphic design education.

Between 1985 and 2005 several educational institutions in South Africa and abroad developed programmes which are not a mere replication of professional design practice. The graphic design department at the VUT has embraced a more broad-based approach to the teaching of design and encourages experimentation with various teaching methods, including placing emphasis on visual learning. Notwithstanding the fact that various teaching methods are available, the face-to-face lecture remains popular at undergraduate level and will undoubtedly continue to do so for a considerable time to come.

The use of visual research methods is relevant to the teaching of visual-based subjects such as graphic design. The division between the practical components and the theoretical components of any graphic design course are easily blurred, as all practical work needs to be supported by a sound theoretical base.

Despite pressure from industry to produce learners who are 'ready for the workplace', there is some support for a theoretical/philosophical approach (Blauvelt 1998; Van Niekerk 1998). This could contribute to a more socially and morally aware and well-rounded graphic designer.

VISUAL LEARNING

Visual learning is an approach to helping learners communicate with imagery. In the graphic design environment, learners deal with vast quantities of visual information and have developed ways of being able to process this information effectively. The visual learning style is useful for learners who prefer the visual modality of learning in order to better recall what has been observed or read. Williams and Williams (1999, 330) note that 'while learners fail to recognize themselves as visual learners, they are in fact heavily dependant on visual information'. It is generally recognised that the implementation of visual learning strategies requires the revision of existing handouts and course structure as well as the implementation of specific visual components as part of the lecture process.

Paivio's (1991) dual coding theory addresses the issue of why some individuals prefer verbal and some visual representations. Course structure at a tertiary education level has changed since the popular onset of the Internet. Learners involved in technical

courses (such as graphic design) are at ease producing and interpreting documents such as presentations, manuals and web pages. Learners involved in non-technical courses (such as public relations) are required to write essays as they have done in the past. There are key differences between the methods in which these courses are organised. The graphic design course deals not only with words but also with the concepts of graphics and visuals and in learners' senior years, with web design, sound and animation. In contrast, many other courses at tertiary level are almost entirely word-based (Markel 1998, 47).

At the VUT, few lecturers are trained in visual studies or visual learning and its uses. Often the theory subjects are 'outsourced' to theory lecturers from adjoining departments. Although most design learners see themselves as visual thinkers, most theory lecturers would see themselves as verbal thinkers. Essentially, the end product that learners create at the end of the year in a typical theory subject is typewritten text. All media to be used within the instructional design are determined by the requirements of learners, objectives of the course, course content, and instructional methods. This is consistent with Kemp's statement that 'media are *not* supplementary to or in support of instruction, but *are* the instructional input itself' (1989, 7). Avenant (1989, 140) argues that research demonstrates that aimless and inadvertent application of visual aids can give rise to misconceptions and confusion. Similarly, shortcomings in the visual aid used can lead to unsuccessful in-context viewing. The learners need to be able to relate the visual matter to the subject matter obtained in textbooks and found by other means of research. The unnecessary implementation of visual aids may also have a confusing rather than an enlightening effect. Visual learning methods may take several forms. The most widely used are:

- role-playing games, feedback and presentations;
- excursions, that is, the opportunity to gain knowledge from industry visits, design studios, advertising agencies, museums and galleries;
- demonstrations;
- audio-visual aids such as film material, including the Internet and interactive DVDs, graphic material and 3D models.

COOPERATIVE LEARNING

In the industry, graphic designers are expected to work successfully in cooperation with each other (Becker 1998). Cooperative learning is learning defined by a set of processes or step-by-step methods which help learners interact with each other in order to accomplish a task.

At VUT, cooperative learning as well as the use of visual learning methods is important to graphic design theory education as they are already implemented in the teaching of several practical components of the graphic design course. Graphic design is a skills-based course and the implementation of a cooperative learning approach may be applied

to both the practical and the theory courses. While discussing a rationale for cooperative learning, Bitzer (2004, 45) notes that 'critical cross-field outcomes as promoted by the National Qualifications Framework should be contextually demonstrated by learners in all higher education programmes'. Cooperative learning supports the learning paradigm as implied by critical cross-field outcomes.

The learning of cooperation and group work can have relevance to the working situation, that is, it is a means of teaching life skills as part of the graphic design course. Furthermore, there exists a belief that cooperation and visual communication can be used to stimulate interaction between diverse cultural groups. Due to their varied cultural backgrounds, learners tend to experience some difficulty in communicating effectively amongst themselves as well as with their lecturers.

The principles of cooperation, group work and cooperative learning affect most aspects of the graphic design field. According to Wild (1998), the use of cooperative, multidisciplinary teams in the graphic design industry is commonplace. To date, cooperative methods have been successfully incorporated into a graphic design learning environment. Behrens (1998, 99) cites an example of a teaching device he called the 'ricochet technique', which is essentially a form of group work. The ricochet technique works on the premise that a graphic design problem is presented to the class and learners have a week to finalise a solution to the problem. Behrens found the ricochet technique a 'fascinating game-like teaching method' (1998, 99) but commented that it was exhausting for everyone concerned, and to critique the problem was almost as challenging as finding a solution to one.

Cooperative learning makes educational sense, but researchers have expressed doubts about the effectiveness of small-group work. Dunne and Bennett (1991, 584) have devoted extensive research to the actual talk which goes on when learners are doing group work and have revealed some disturbing findings. Learners were not unsuccessful at remaining focused on a task, but rather their discussion did not enhance it. Their study reveals that the missing ingredient to successful group work is learner cooperation. The pioneering practice of group work was being destabilised by the persistence of more traditional classroom values. It is worrying for lecturers that without constant supervision even adult learners have difficulty staying focused on the task. Another concern is that learners adopt roles within the group which are not conducive to learning. These include the 'bully' who overrules all others; the 'hitch-hiker' who sits back whilst everyone else does the work; the 'buffoon' who distracts each one from the task; or the 'isolate' who is marginalised by the remainder of the group (Cowie, Smith, Boulton and Lavar 1994, 59).

INTEGRATING VISUAL LEARNING AND COOPERATIVE LEARNING

One of the core concepts located in the area of overlap between theories of visual learning on the one hand and theories of cooperative learning on the other, is what Banks (2001, 119; 2002, 1) refers to as the 'collaborative account'. Used in a narrow

sense, the term derives from social anthropology where it refers to instances where study participants do not merely collude with the researcher by allowing visual documentation to take place in their communities, but actively give the researcher directions about what should be visually documented, and how the documentation should occur (Banks 2002, 119). In contrast, a broader interpretation of what visual collaboration involves is evident in a wide range of studies located in the field of education that include the use of collaborative visual accounts in adult literacy training (Dambekalns 2000), youth media education (Niesyto 2000), as well as artists-in-residence programmes (Grauer, Irwin, De Cosson and Wilson 2001). Recent studies conducted under the auspices of Arts-based Educational Research (ABER), a special interest group of the American Educational Research Association, amply illustrate the different forms that visual collaboration – or the combined application of visual learning and cooperative learning principles – may take when a variety of art disciplines are actively integrated into the education process (Norris 2000). However, while the above-mentioned studies contain numerous examples of instances where visual learning principles and cooperative learning principles were successfully applied in conjunction with each other, there is no mention in these studies of a link between successful visual collaboration on the one hand and learner performance as measured by means of examination results, for example, on the other hand. In other words, while the studies cited above – none of which were conducted in a tertiary setting – thoroughly illustrate the concept of visual collaboration in action, they do not shed any light on whether combining the respective strengths of visual learning principles and cooperative learning principles necessarily leads to increased performance among the learners.

METHOD

As mentioned in the introduction, the exploratory study conducted at the three campuses of the VUT dealt specifically with the subject History of Art and Design 1. The study was carried out with the voluntary participation of first-year graphic design learners at three campuses of the VUT, that is, the Vanderbijlpark, Ekurhuleni and North-West campuses. A comparative assessment methodologies framework was utilised. The data collection procedure which followed, as summarised in Figure 1, was the same at all three campuses. The learners were placed in two groups and then participated in two different teaching sessions, one involving the application of visual learning (VL) and cooperative learning (CL) strategies, while the other was modelled on the 'standard' lecture format. They then answered questionnaires about the two different teaching formats in order to determine which format was preferable. Focus group interviews were also conducted with the groups of learners in order to identify any shortcomings or benefits associated with the two approaches.

The exploratory study was run by the same facilitators at all three campuses to ensure the experiences that the learners had during the study would have been similar. Although the actual lectures were not rehearsed prior to undertaking the study, the facilitators

met and discussed the content as well as the format of both lectures thoroughly. The facilitators focused their attention on designing challenging tasks to help learners reach their goals and on ensuring that learners had the necessary skills for succeeding in these tasks. In terms of what was offered to the learners, both lectures were based on work out of the History of Art and Design 1 syllabus. The work covered would form part of the same examination at the end of the semester, but could not be evaluated separately. Therefore the standard of knowledge offered to the learners was at a typical class level. The study was undertaken with the awareness of the differences within the content of the two lectures, as they were not on the same topic, but as both formed part of and were dictated by the syllabus of History of Art and Design 1, the results of the study need to be viewed in context of one lesson within a whole years' programme. Doubtless this needs to be taken under consideration when reviewing the results of the study, but it was not seen as a major factor because there was no evidence in the data collected/responses of the learners' that these issues had had an impact.

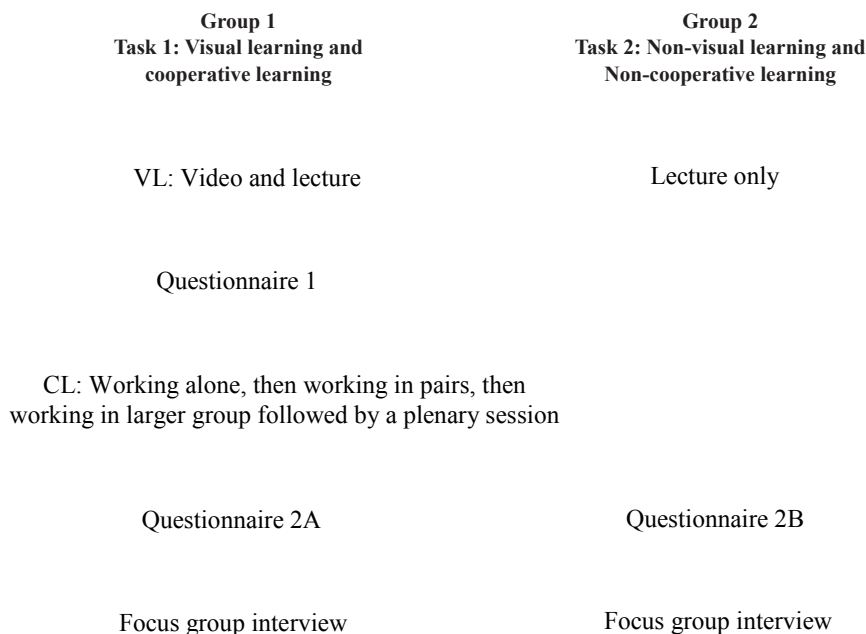| **Group 1**	**Group 2**
Task 1: Visual learning and cooperative learning	**Task 2: Non-visual learning and Non-cooperative learning**
VL: Video and lecture	Lecture only
Questionnaire 1	
CL: Working alone, then working in pairs, then working in larger group followed by a plenary session	
Questionnaire 2A	Questionnaire 2B
Focus group interview	Focus group interview

Figure 1: Overview of the data collection process

As summarised in Figure 1, the learners were given a series of questionnaires and notes which they were required to complete once they had attended the session. Questionnaire 1 determined their perceptions of and attitude towards visual learning and cooperative learning. This was followed by an explanation of the format to be utilised for Task 1,

as well as the pre-determined task which the learners were required to complete whilst utilising cooperative visual learning techniques. The cooperative learning techniques involved successively working alone, then working in pairs, thereafter working in a larger group of approximately four, followed by a plenary session of all learners in the class. Questionnaire 2A then determined the learners' responses and attitudes towards Task 1. In contrast, the learners in the other group were required to answer the questions about Task 2 immediately after attending a lecture where no additional visual learning material (bar the text book) or cooperative learning strategies had been utilised. Questionnaire 2B determined the learners' responses and attitudes to Task 2. The learners were not asked to state their age, gender or other demographic data, as this would have been irrelevant, but they were asked to indicate at which campus they were attending class, as this would help trace and later analyse class averages for the subject. Once the learners in each of the two groups had completed the allocated tasks, learners were selected randomly to participate in a series of focus group interviews about their experiences. The focus group interviews concentrated on the learners' attitudes to visual learning and cooperative learning, as well as on the combination of these approaches.

RESULTS

As far as the cooperative learning experience and the group work are concerned, learners at all three campuses were in agreement that they preferred the 'standard' format of the lecture to the video and group discussion that followed. A high percentage of the learners (69.6%) at all three campuses were in agreement that the lecture was enjoyable. Furthermore, 37 per cent learners admitted that no conflicts had been experienced during the group work and 72 per cent acknowledged the positive sharing of opinions regarding the video content with the group. However, only 41 per cent of all respondents agreed that the group work discussion had centred around the content of the video, while 32 per cent were uncertain. Only 37.6 per cent of learners found the group discussion memorable. It appears that the learners found the 'standard' lecture more memorable as they had been able to take notes while the lecturer was speaking and ask questions afterwards. At the Vanderbijlpark campus, learners argued that they did not enjoy participating in the group discussion for reasons such as group dynamics and an express need for 'someone' other than a member of the group to fill in the gaps in their discussion. Learners were not merely satisfied with their own conclusions, but needed affirmation and encouragement that their findings were 'correct'. Learners at the Ekurhuleni campus enjoyed the group work as long as the group remained small (fewer than four participants) – as soon as the number of participants was greater, the discussion turned to chaos. At the Ekurhuleni campus the learners seemed to hold the facilitator's opinion in less regard than at the Vanderbijlpark campus and therefore their need for approval from the facilitator was diminished. What is interesting is that learners with previously higher than average examination scores (mainly in the Vanderbijlpark group) preferred to keep the standard lecture system in place rather than opt for the group work, as this enabled them to

engage in individualised study, work more quickly and therefore achieve an optimum result. Learners with lower scores found the group work more engaging, yet claimed to have learned less than in the structured lecture format. One may assume that group work is attractive for its entertainment factor but that learners actually learn more in the traditional environment. Learners at the North-West campus answered very positively when questioned about their attitudes to the group work. Yet when observed, the group work itself was problematic as not all participants chose to engage in it.

Because the groups in this study were relatively small (at most 16 members), they functioned well until all the members joined in the discussion. The role of the group members who disrupted the discussions after that point may need further investigation. There were instances where the group work did not function as well as a whole, for example at the Vanderbijlpark campus, which had the largest group (16 members). In this group, individual members interfered or ignored others' active engagement in the given assignment. Learners raised concerns that there was little control within the group. The active group members saw both interference and non-participation as disruptive aspects of the process. The role of the learners' own motivation to succeed in the exercise is significant but under-researched, according to Peterson and Miller (2004, 161) '. . . although CL (cooperative learning) has been widely researched and used in classrooms at all levels there has been surprisingly little research published on student motivation for CL'. One of the conclusions based on this research could be that learners respond well to group work tasks that they perceive as relevant to 'the industry'. The learners' response tends to be more positive provided they are given adequate amounts of information (sometimes perceived by the lecturer as excessive, with the fear that it may lead to so called 'spoon-feeding') and are equipped with the appropriate skills in order to complete a given task.

As far as the visual learning component of the study is concerned, most learners agreed (81%) that they found the visual material useful. The responses of the learners differed according to the campus at which they were attending class. Learners at both the Ekurhuleni campus and the North-West campus complained about a lack of visual information given in this class prior to the exploratory study and noted that they very seldom, or never, watched any video material. At the Vanderbijlpark campus, although most learners agreed that additional visual content in the forms of videos or visual presentations would be beneficial, they were unprepared to give up any spare time in order to have access to this material. The practicality of the visuals may be divided into two categories: visual material that is readily available, such as the content of the textbook or any support documents given out in class, and visual material that is unusual in its delivery, for example the video in the present study. Although the learners agreed that the general content of the video was interesting and applicable to the lecture, some were resentful that they had to 'sift' through all the information in order to access the information that was relevant to them. One of the reasons cited by learners for the memorable quality of the 'standard' lecture was that the lecture format gave them an opportunity to summarise important points and take notes, something

which they were unable to do during the video presentation due to speed of information given and darkened venue. All learners agreed that it was easy to discuss the visual material and that this made the work more memorable for recall during examinations. Surprisingly, the learners were satisfied with the amount of visual information shown during the 'standard' lecture, most preferring to take down notes while they listened and observed.

The results of the study indicate that although the majority of learners at all three campuses enjoyed and saw value in most aspects of the visual learning and cooperative learning strategies, the combination of these was seen as disruptive to the learning environment. The increased use of such approaches is thus unlikely to lead to a significant improvement in examination results in the long term.

CONCLUSION

This article discussed an exploratory study which was undertaken at three campuses of the VUT in response to the weak examination results in the subject History of Art and Design 1. The article included a concise review of some aspects of graphic design theory education, both in the South African and the international context. Comments were provided on the background of visual learning as well as visual learning methods and their importance to design. The validity of cooperative learning within the graphic design education context, was discussed, followed by an account of the methodology of the exploratory study. The results were finally presented.

Based on the results of the exploratory study undertaken at the VUT, the use of the combination of the visual learning and cooperative learning approaches is unlikely to lead to a significant improvement in learner learning styles and thereby examination results. These results show that learners' primary concern is the recollection of facts for the examination – this leads to surface learning, regurgitation and memorising in order to pass. The study incorporated lecture techniques which were not unfamiliar to the learners, as visual learning, cooperation and group work are frequently utilised in the practical component of the Graphic Design course at the VUT. Unfortunately, practice and theory are not comparable and this was considered when reflecting on the results. The learners' familiarity with increased levels of visual learning and cooperation may minimise the difference experienced in the theory component, but nothing in the data suggests that it does.

Specific recommendations that flow from the outcome of the study include:

- Facilitators need to monitor the group work constantly and point out problem areas such as a lack of leadership, poor communication and decision-making skills. Ideally, at first-year level, a senior-level tutor should be assigned to act as facilitator for each group in order to monitor the group effectively.
- In order to benefit fully from an increased level of visual learning, learners should be willing to devote more time and energy to visual research.
- It is important that lecturers stress the significance of visual learning and draw

attention to the opportunities afforded to learners by the use of visual learning methods**. Furthermore, the learners need to be active participants in every visual lesson – they should be encouraged to collect visual information, discuss it and draw conclusions – thus eliminating vagueness which may be associated with this approach.

• Learners should be continually encouraged to make the connection that the content of a theory subject such as History of Art and Design 1 is relevant to the practical component of the graphic design course.

On a more general note, while the results of this exploratory study are not necessarily transferable to other courses within the VUT or to other institutions of higher learning in South Africa *per se*, they do contain clear lessons directly applicable to them. The first is that the learners who participated in the study indicated that they saw value in both the visual learning strategies and the cooperative learning strategies, a finding which is consistent with the literature. There is, therefore, nothing in the results that suggest that the utilisation of these two strategies should be abandoned or reduced in future, bearing in mind that each academic department and each institution has its own particular student population and that that the new entrants to higher education institutions may increasingly include learners who have been exposed to visual learning and cooperative learning in the school environment. The second lesson learned is that it is not a foregone conclusion that employing two separately successful methods (in this case visual learning and cooperative learning) in combination with each other will necessarily be perceived as desirable by the learners. The participants in this study indicated unambiguously that they experienced the combined implementation of visual learning and cooperative learning strategies as disruptive, expressing a preference for the 'standard' lecture format instead. In other words, the outcome of the study highlights that assiduous implementation monitoring is crucial when two separately successful learning strategies are used concomitantly.

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