

Research Article

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**Exploring the use of Learning and Teaching
Strategies in Visual Communication to improve
the use of Drawing and Sketching**

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Abstract

The purpose of this paper is to explore how teaching and learning strategies in the module Visual Communication can be adapted to include drawing and sketching methods to encourage design students to utilise freehand drawing and sketching during the first phase of the design process. Quantitative research was conducted based on a cross-sectional survey design. Students were asked to solve a design problem before and after an intervention. Data was captured using a questionnaire and results were analysed through the use of numerical counts-frequencies, and is presented graphically. Findings indicate that teaching and learning strategies can be successfully adapted to include drawing and sketching methods to encourage design students to better understand, and make use of these abilities and techniques, during the initial phase of the design process.

1. Introduction

In Higher Education today the implementation of effective teaching and learning strategies is of great importance to create a significant learning experience. Per Fink (2013) significant learning can make a vast difference in students' lives by helping them to do more than just understand and remember information as it helps them to connect what they learn with their 'real lives'. Within the realm of graphic design, well-designed teaching and learning strategies are a critical component in creating a significant learning experience (Fink, 2013).

The graphic designer can be seen as a visual problem solver who solves problems by thinking critically and delivering a visual solution (Ciampa, 2010). When embarking on a new brief, design students are taught to follow certain steps that will guide them in solving a creative problem related to a design brief. These steps can be referred to as the design process. The design process is a comprehensive toolkit that designers use when solving design problems (Dazkir *et al.*, 2013). It requires a designer to conduct research, brainstorm, use idea generation, select a preferred solution, and, based on this information, create rough drafts. In this process the idea generation stages traditionally make use of sketching and drawing techniques to inspire ideas and concepts. It is these vital techniques that students tend to neglect. Appiah and Cronje (2012) indicate that research conducted on the use of drawing and sketching in design revealed that students go through their idea generation stage using their computers only, instead of using the more traditional sketching on paper process.

By making use of their computers only, students are missing out on benefits such as increased conceptual and cognitive capacity as well as a more significant learning experience. According to Ayiran (2008) the use of sketches are an important means by which students can create design solutions, since it magnifies mental capacity. Interestingly, Ayiran (2008) also comments that, in general, drawing and sketching is seen as a non-rational way of learning, and thus it does not get the recognition and attention it deserves in modern higher education institutions. From the information presented above it would appear that there is room for improvement within current learning and teaching strategies to include drawing and sketching as part of the design and learning process. According to Eison (2010) creating well-designed teaching and learning strategies will encourage students to think more critically and creatively as well as reflect upon their learning experiences. This paper will explore how current teaching and learning strategies can be adapted to encourage design students to utilise drawing and sketching during the idea generation phase of their design process.

2. Description of the Problem

Appiah and Cronje (2012) determined that students do not like doing actual traditional pen to paper thumbnail sketches when developing their ideas. Students do not start their project off by doing sketches but would rather do them at the end of their assignments just before handing the project in, in order to meet academic requirements. Students use the computer and Internet services as their main source for inspiration. A worrying insight from the research by Appiah and Cronje (2012) revealed that the students copied ideas from the Internet without adding any additional creative component. Similarly, it has been observed that final year students in the Visual Communication module at a Higher Education Institution are not making the best possible use of freehand drawing during the idea generation phase. Time, pressing project deadlines, familiarity of technology, the notion that sketching is unnecessary and the fact that they have not been exposed to its benefits might all be reasons as to why students are neglecting this method (Appiah and Cronje, 2012).

It is therefore imperative to explore how teaching and learning strategies within the Visual Communication module can be adapted to encourage students to make use of sketching and drawing during their design process. This may lead to a deeper understanding of the importance of drawing, and encourage students to convert to conventional methods of drawing and sketching as a tool to enhance learning, thinking, creativity and idea generation.

The following two questions will be asked to further explore the research problem:

- What learning and teaching strategies can be employed to encourage students to use conventional methods of sketching and drawing during the design process?
- How can these learning and teaching strategies be adapted to encourage the use of freehand sketching and drawing by students during the design process?

This paper will attempt to explore methods in which educators can encourage students to use drawing and sketching to enhance their idea generation, as well as establishing how lecturers can adapt their teaching and learning strategies to highlight the importance of drawing and sketching.

3. Literature Review

The review focuses on various facets regarding the use of drawing and sketching within design as well as education in order to give context that relates to the research problem.

3.1 Drawing in Graphic Design

When confronted with a design problem, students are expected to follow certain steps to achieve the best creative solution. Appiah and Cronje (2012) state that these steps can be seen as the process of achieving a solution and encompassing the use of critical thinking skills to observe and analyse the brief/problem. During the brainstorming phase design students are traditionally required to sketch and draw their initial ideas and concepts on paper before consulting with their lecturers.

This method is used because it remains the quickest and most efficient way of communicating visual solutions before they are taken further. It assists in the instant exploration of alternative concepts and ideas (Do and Gross,1996). Sketching and drawing is an important tool that supports this phase in the design process. Per Have and Van den Toon (2012) it may seem easier and more efficient for design students to sketch and draw on a computer but that can take more time and investment in learning the software. Students who immediately work on a computer are less likely to develop rich, sensitive and complex solutions. Rean (2014) noted that there is a sense of flexibility and spontaneous fluidity that can only come from putting pen to paper.

Drawing and sketching should look beyond the tip of a pencil and focus on being an intellectually driven process of translation. This translation forms part of design reasoning, as well as recording the thinking process (Farthing, 2011). It is the process by which cognitive ideas and concepts become visual and tangible. Brew et al., (2011) explains that according to cognitive scientist David Kirsh, drawing is a mode of thinking with our bodies that invites analogies through the process of mark making. Drawing can close the gap between thinking and doing. Where students seem to have difficulties articulating their thoughts drawing can provide students with a way of expressing their thoughts and ideas in a visual way (Croft, 2011).

Adams (2012) sees drawing as a system used by people to enquire about the world around them. Drawing aids them in exploring their inner thoughts, feelings and dreams. As discussed, drawing plays an important role in many processes such as cognitive, creative and learning. However, it is apparent that the recognition of the importance of drawing is sometimes neglected. According to Appiah and Cronje (2012) design students are avoiding the use of sketches and drawings during the design development process. They are more inclined to spend time developing their designs directly on the computer and are now using computer-generated ideas in the development phase of their design projects instead of utilising traditional quick sketches and drawings (Appiah and Cronje, 2012).

Technology has become a source of great temptation for design students. With the click of a button students can download templates and images that can be used in the initial stages of the concept development process. Appiah and Cronje (2012) mention that the availability of image banks and free design templates on the Internet have made it easy for students to include these in their creative process. This advancement is one of the reasons students are shifting away from freehand drawing. Another reason is the option of creating thumbnail drawings digitally. Technology today is aiding designers by freeing them from the perceived hassle of developing thumbnail drawings (Appiah and Cronje, 2012). This shift is worrying because idea generation calls upon students to engage and create their own creative concepts for their design solutions.

3.2 The Use of Drawing within Teaching and Learning Strategies

According to McGonigal (2005) teaching and learning strategies can be seen as well-designed plans of action to get students from what they currently know, to the learning outcomes of the module or course. During this time students must not only acquire new skills and information but also renovate their approach to thinking and learning. Within higher education effective

teaching and learning strategies are essential if students are to actively engage with their new learning's as well as experiencing deeper understandings. If powerful kinds of learning are to be achieved by student's then more powerful kinds of teaching is needed (Fink, 2011). High quality learning has been achieved when students can apply their newly acquired knowledge to solve problems and communicate that knowledge to others (Killen, 2010). They are able to link their existing knowledge to that which they have acquired and retain their new learning's for an extended period of time.

To obtain the above, teaching and learning has to change from teacher centered, where lecturing is the dominant form of instruction, to student centered, where students are actively engaged. Bonwell [n.d.] states that faculties need to develop instructional approaches that can transform students from passive listeners to active students. There are various learning strategies that actively engage students in their learning's. Active learning is the process wherein learners are actively engaged in the understanding of ideas, facts and skills through a series of directed tasks and activities (Bell and Kahrhoff, 2006). By incorporating various drawing and sketching exercises within learning strategies like co-operative learning and problem solving, educators can explore ways of actively engaging students in their learning processes.

Co-operative learning is a great way to introduce drawing and sketching activities. Co-operative learning takes place when students work together to accomplish shared goals, which is beneficial to all members of the group (Thomson and Brown, 2000). Drawing activities that can be used in a co-operative setting include asking group members to draw each other's profiles as well as working together on a single drawing. With regards to the latter each team member gets a chance to add his/her own drawing style to the groups drawing. A co-operative drawing activity can aid students that feel uncomfortable with their drawing abilities. Group members provide each other with feedback, support, applauding, encouragement and most importantly teaching (Li and Lam, 2005).

Problem-based learning is another strategy that can be used to teach students the benefits of drawing and sketching within the design process. Savery (2015) explains that problem-based learning is an instructional, learner-centered approach that motivates students to do research, integrate theory and apply knowledge and skills to define a solution to a problem. One of the many benefits of using such a strategy is that it is centered around solving real world problems. By allowing students to solve real life problems through the use of sketching and drawing they can experience firsthand how these activities will help them to solve these problems. Activities designed around problem-based learning, should be those valued in the real world (Savery, 2015).

4. Research Methodology and Design

This research paper employs a quantitative methodology, based on a survey design. The research focuses on the collection of numerical data and the analysis thereof in order to determine opinions and possible solutions to the research problem. Bless *et al.*, (2013) explains that quantitative research relies on numbers and statistics. Its two major strengths are that its findings are generalisable and objective (Durrheim and Painter, 1999). This article will use quantitative research to explore how teaching and learning strategies can be altered to encourage visual communication students to draw and sketch during the initial phases of their design process. It is important to note that due to the fact that the research is exploratory in nature no generalisation will be made.

4.1 Research Paradigm and Methodology

Mackenzie and Knipe (2006) explains that it is the choice of worldview that cements the motivation, intent and expectations of the research to be done. This research papers main aim is to investigate the identified problem through an exploratory study. Ryan (2006) states that post-positivist researchers set out to investigate a problem but not inevitably solving it. Utilising a pragmatic worldview places the research question or problem as central and applies different approaches at understanding it, explains Mackenzie and Knipe (2006).

Quantitative research is used to interpret findings that are derived from a sample group within a specific population. Welman *et al.*, (2007) specify that quantitative research main purpose is to assess objective data. It also deals with the constructs of reality and applies an outsider's perspective. Labaree (2013) states that quantitative research is great in testing hypotheses but not so efficient in giving contextual detail. Results tend to not give much detail on motivation and attitudes.

The research made use of a cross-sectional survey design. This design is used to create an overall depiction of an occurrence at one point in time. Data is collected only once (Du Plooy-Cilliers and Cronje, 2014). The questionnaire applied questions in a mixed method. The questionnaire started with closed or pre-coded questions, offering students a range of answers to choose from which the student could then tick depending on which one he/she felt is more applicable (Welman *et al.*, 2007). The questionnaire also made use of open-ended questions that asked the students questions that only he/she had the answer to. According to Welman *et al.* (2007), here the student's answer is not influenced by the researcher or the questionnaire because the student gives his/her answer in his/her own words. These questions explored how

students viewed freehand sketching and drawing and how it fits into the design process. The questions also aimed at revealing students' views on the effectiveness of teaching and learning strategies that include drawing and sketching.

4.2 Strategy Used to Execute the Research

Data was collected using a well-structured and designed questionnaire. Questionnaires are good ways of obtaining data regarding typical behaviour, opinions, beliefs and convictions about a certain issue or concern (Welman *et al.*, 2007). The questionnaire was structured around a problem-solving learning strategy that made use of various 'in class' drawing activities, a lecture, as well as a short fieldtrip.

The strategy stretched over a two-day period. On day one students were briefed to develop a visual identity for one of Johannesburg's most colourful suburbs – Melville. Students were tasked to design an identity that can breathe new life into Melville. After students were briefed they were instructed to spend two hours generating concepts of possible logo designs using their computers only. They could research Melville using the Internet as a source of inspiration. However, they were restricted in that they were not allowed to use pen and paper to generate their ideas. After two hours' students had to count the number of concepts they had generated.

The following day, the intervention took place over five hours. Students attended a lecture and discussion on the benefits of sketching and drawing, and actively engaged in various drawing and sketching exercises, for the first two hours. These exercises were designed to showcase the benefits of using sketching and drawing as part of the design process. After the completion of the lecture and exercises, students undertook a fieldtrip into Melville. Over the next two hours, students had to explore their surroundings and draw and sketch possible logo ideas for Melville. They were not allowed to use their cellphones or laptop computers for inspiration. Students engaged actively with their surroundings. After the completion of the fieldtrip, students returned to the classroom where a questionnaire was completed.

4.3 Research Population and Sampling

The population used for this research consisted of all final year students registered in the module Visual Communication. Throughout their studies these students are required to complete practical projects that include the use of the design process. Non-probability sampling was used to get the most accurate sample group. A unit of analysis consisting of 30 students was secured based on the fact that the students were conveniently part of the final

year Visual Communication module. Consent forms were handed out to all 30 students. As identified as a risk to this study in the original proposal, the final sample size was 22 due to 8 respondents either not partaking in the research at all or handing in incomplete questionnaires.

4.4 Limitations Applicable to the Research

This is an exploratory study. Exploratory research addresses a problem that is not well understood. It is characterised by a high level of flexibility and lacks a formal structure. Its main aim is to identify the perimeters of the environment in which the problems of interest are most likely to reside and to then identify the factors that might be of relevance to the research (Van Wyk, 2012). This can be seen as a limitation because exploratory research is broad in focus and rarely provides conclusive answers to the issues identified in the research.

4.5 Ethical Considerations

According to Stringer (2008), any research which includes the participation of people should include ethical considerations that protect their wellbeing and interests. All participating students were informed of the purpose of the study. Students that did not wish to continue were assured by the researcher that no discrimination of any nature would occur. The students were made aware that the findings of the research would be shared with the entire class and not just to those who participated.

Students were notified that their questionnaires would remain anonymous and that they would not need to add their names to the forms. Students were assured of the confidentiality pertaining to the information included as part of this research. Before continuing with the research they were made aware that they are allowed to withdraw from the process at any stage. As the researcher was also their lecturer it was made clear that their participation or the lack thereof would have no impact on their academic results. Each participating student signed a consent form, outlining the above, prior to the commencement of the research.

5. Data Analysis

Data gathered from the questionnaire was analysed through the use of numerical counts-frequencies followed by percentages. Taylor-Powell (2003) explains that numerical counts show how many times something has occurred or how many answers fit into a particular category. These numerical counts are then used to serve as a base for other calculations such as percentage. This can be beneficial as percentage expresses the data as a proportion of a

whole. Results were calculated and the data presented graphically. The human brain searches for patterns and, by presenting quantities in visual formats, meaning can be expressed quickly and efficiently (Du Plooy-Cilliers *et al.*, 2014). The following section shows the results and findings from each question used in the questionnaire.

5.1 Comprehension of brief one

Figure 5.1 provides information on how well respondents understood the first brief.

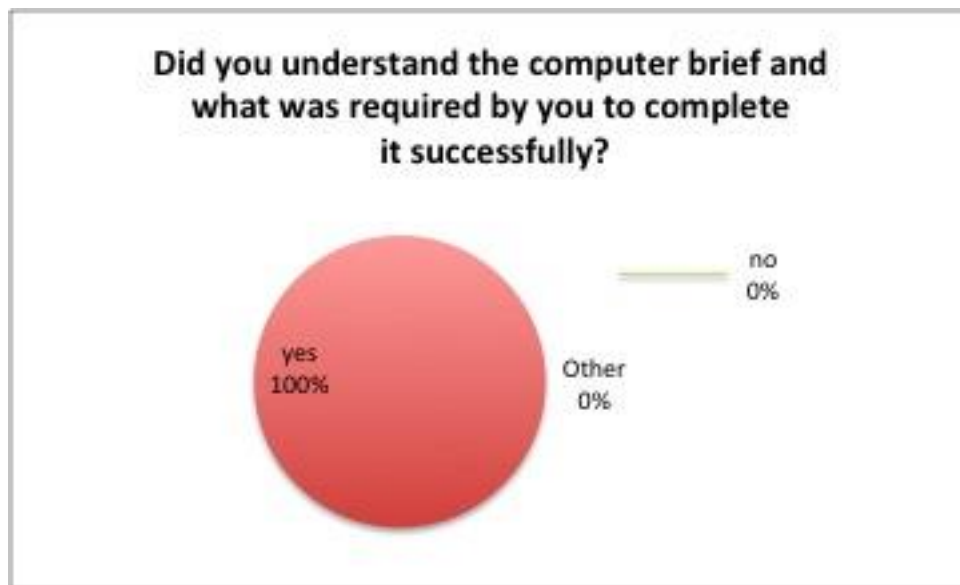


Figure 5.1: Analysis on the comprehension of brief one

Figure 5.1 shows that 100% of the respondents understood the first brief and were therefore able to research Melville using only the Internet with no written information or drawings made to refresh their memories. Simpsons Creative (2011) states that a brief act like a map that leads to imaginative solutions. It's shows direction and helps students not to waste time.

5.2 Perceptions of brief one

Figure 5.2 below provides information on how the respondents felt about the instruction of completing the brief using their computer only.

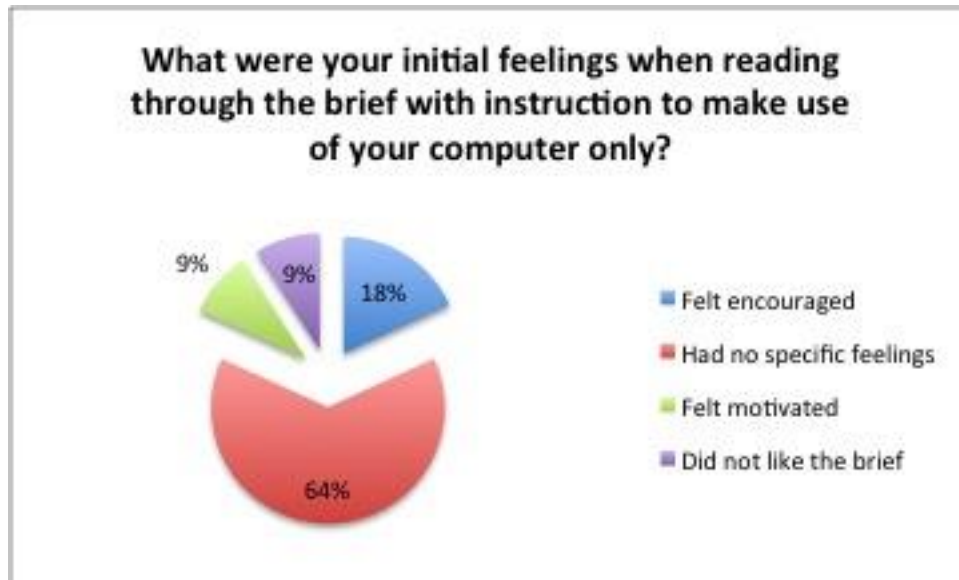


Figure 5.2: Analysis on the perceptions of brief one

Figure 5.2 shows that 64% of respondents had no specific feelings towards the instruction, while 18% felt encouraged and 9% felt motivated. Nine percent of the respondents experienced negative feelings regarding the brief. The above finding might imply that, at this stage of the research exercise, for the majority of the respondents' ambivalence towards the instructions flow from their familiarity of using technology in the design process. Likewise, Appiah and Cronje (2012) states, that students are influenced by the convenience and ease with which they can access and modify ideas on computer and abandon the use of traditional thumbnail sketches.

5.3 Perceptions of completing brief one

Figure 5.3 below provides detail on how comfortable the respondents felt when completing the brief using their computer only.

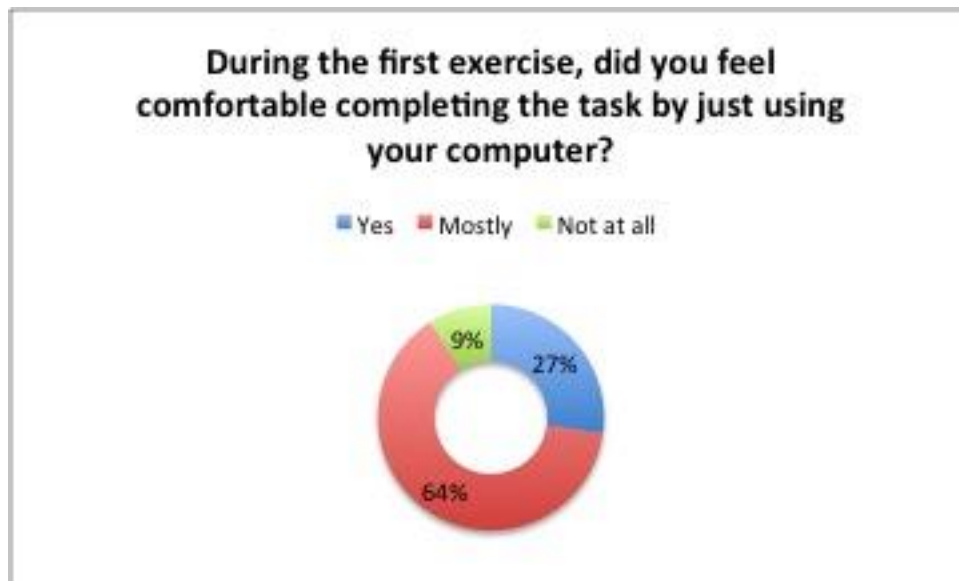


Figure 5.3: Analysis on the perceptions of completing brief one

Figure 5.3 shows that 64% of respondents felt that they were comfortable most of the time, while 27% felt comfortable all the time and 9% of respondents experienced feelings of discomfort. This finding will appear to support Figure 5.2 where prior to the execution phase of the exercise the majority of respondents were comfortable with the idea of working on computer only. Students enjoy the use of technology when generating initial concepts and they find it fast and simple (Appiah and Cronje, 2012).

5.4 Respondents' feelings on being restricted to computer use

The aim of this section was to determine the level of restriction experienced by respondents when generating concepts using their computers only. Findings are presented in Figure 5.4 below.

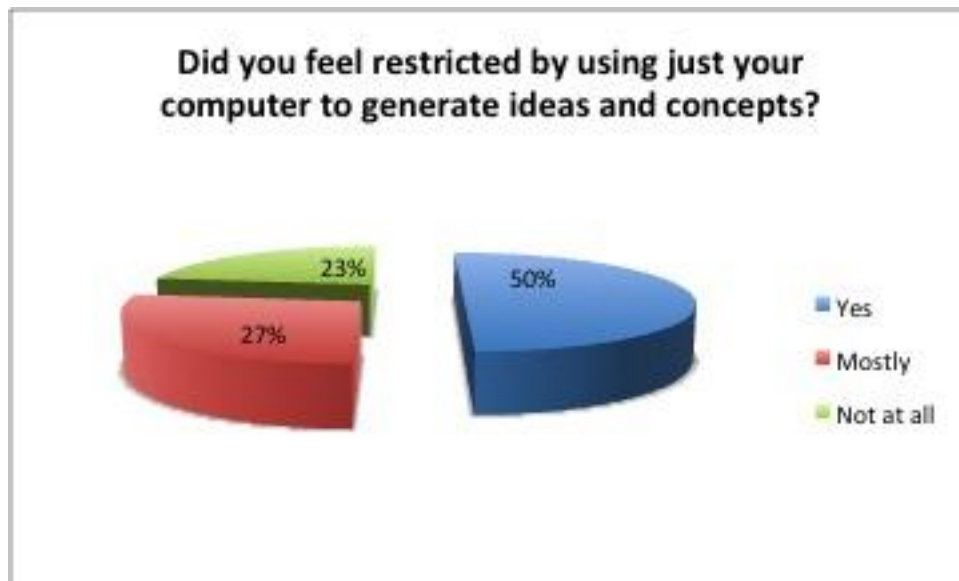


Figure 5.4: Analysis of the level of restriction

Figure 5.4 shows that 50% of respondents felt that they were restricted, whilst 27% felt they were mostly restricted and 23% felt they were not restricted at all. The finding reveals that while respondents initially felt very comfortable with the idea of using only their computers (see Figure 5.3), 50% of them, after having completed the first exercise, felt creatively restricted by this limitation. This finding seems to support the argument by Have and Van den Toon (2012) that the computer can do a lot but not everything and that it should be used for repetitive and complex tasks.

5.5 Free flow of creativity

Figure 5.5 provides information on how freely the respondents' creative thoughts flowed when using just their computers.

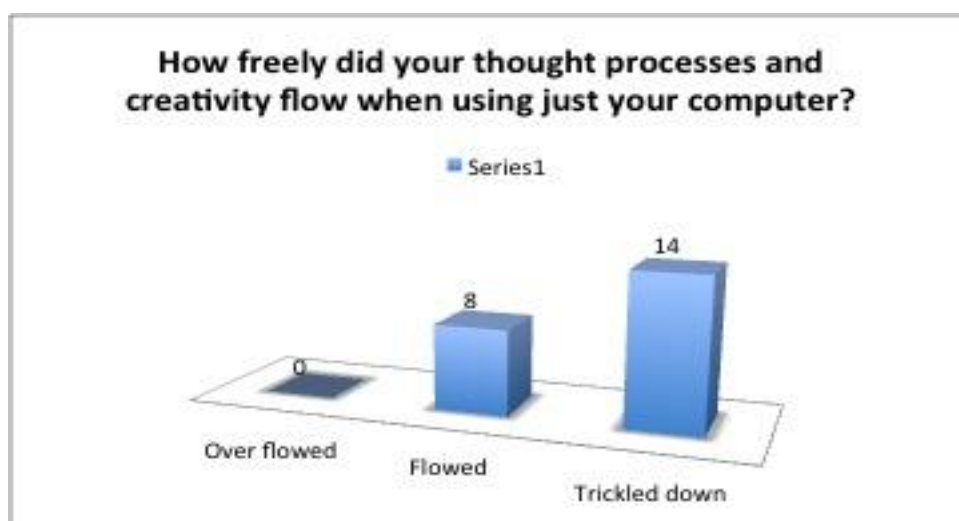


Figure 5.5: Analysis of the flow of creativity

Figure 5.5 shows that out of the 22 respondents 14 (64%) felt that their creativity trickled down, 8 (36%) felt that it flowed and 0% of them felt like their creativity over flowed. The data implies that by using just their computers the majority of respondents did not experience a constant and free flow of creative ideas. Not one respondent felt that their creativity over flowed. This analysis tend to support the argument of Veisz *et al.*,[n.d.] that technology has the potential to negatively impact the design process and decrease motivation and creative abilities. This finding contrasts with the respondents' initial levels of comfort when instructed to design using only their computers.

5.6 Number of concepts and ideas generated on computer only

The aim of this section was to determine the number of concepts generated by respondents through the use of their computers only. Findings are presented in Figure 5.6 below.

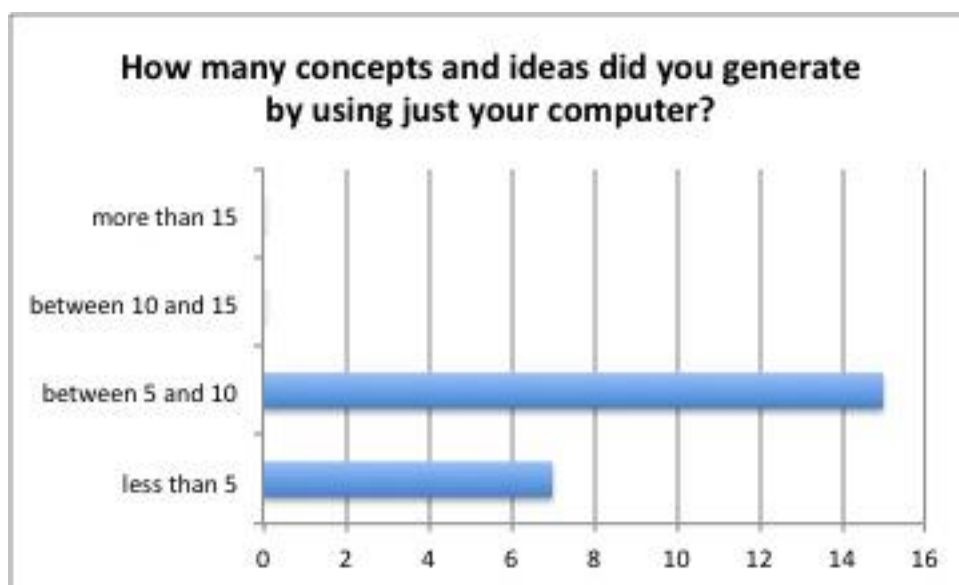


Figure 5.6: Analysis of the number of computer-generated concepts

Figure 5.6 shows that 15 (68%) out of 22 respondents generated between 5 and 10 concepts and 7 (32%) respondents generated between 0 and 5 concepts. No respondents generated more than 10 ideas. The number of concepts generated through the use of the computer only seems to support Rean's (2014) argument that using pen and paper are more efficient than using a computer when generating initial concepts in the design process.

5.7 The experience of including drawing and sketching within teaching and learning strategies

Figure 5.7 provides information on how the drawing and sketching teaching strategies were received by the respondents.

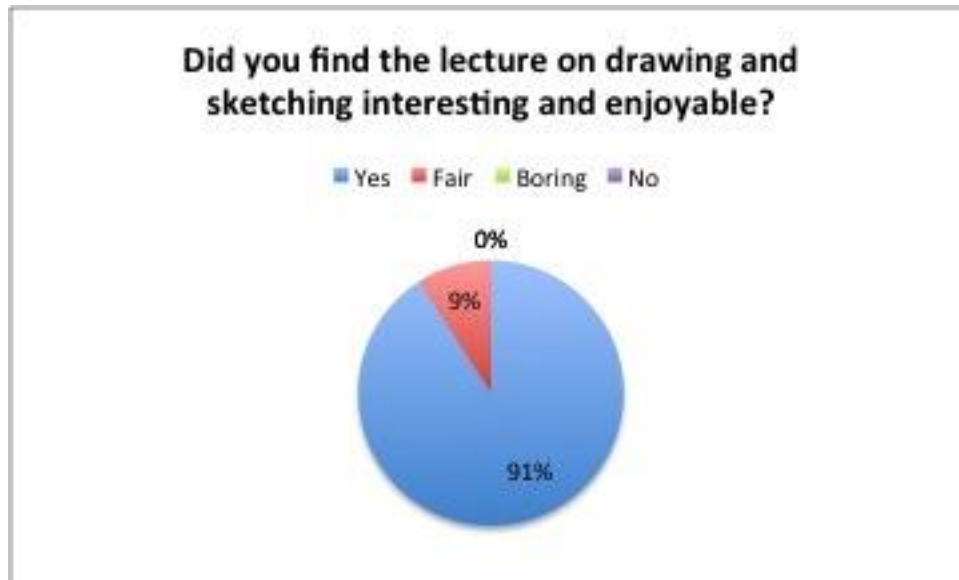


Figure 5.7: Analysis of the reception of sketching and drawing teaching strategies

Figure 5.7 shows that 91% of respondents found them interesting and enjoyable, whilst 9% found them to be fair and none felt the strategies were boring or of no interest. Drawing brings with it a sense of fun. Design students that tend to focus on technology can miss out on the sense of joy and creative play that their field encompasses (Howard-Jones, 2008).

5.8 Level of enjoyment when engaging in drawing activities

The purpose of this section was to determine the level of enjoyment experienced by the respondents when engaging with the drawing activities. Findings are presented in Figure 5.8 below.

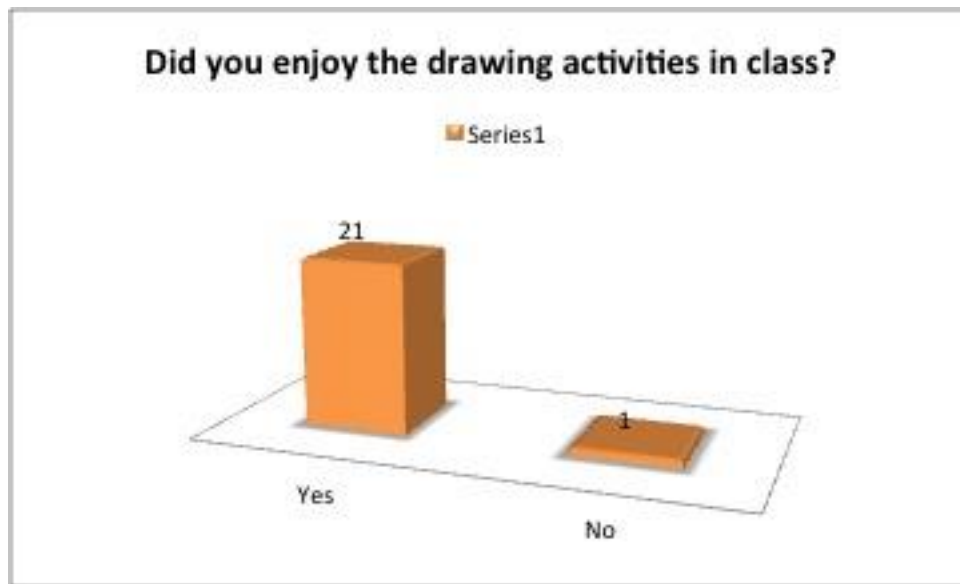


Figure 5.8: Analysis of the enjoyment of drawing activities.

Figure 5.8 shows that out of 22 respondents, 21 (95%) enjoyed the drawing activities, and only 1 (5%) did not. This is encouraging when considering modifying a module. Teaching strategies within the module can be re-examined to include drawing and sketching exercises that actively involve the respondents and in doing so open their minds to the benefits of utilising drawing more in the design process. Brew et al., (2011) states that drawing has the potential to extend a person's mind, memory and understanding of new concepts and ideas.

5.9 Drawing and sketching in front of peers

Figure 5.9 provides information on how comfortable respondents felt drawing in front of their peers.

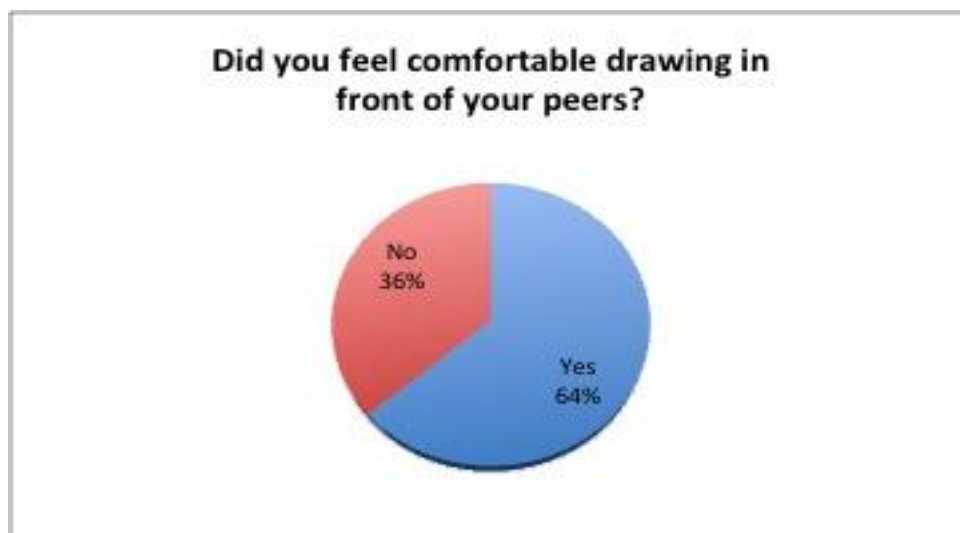


Figure 5.9: Analysis on how comfortable the respondents felt drawing in front of peers

Figure 5.9 shows that 64% of respondents felt comfortable and 36% did not. This is important to bear in mind when considering the reasons why some respondents may be reluctant to incorporate drawing and sketching into the design process. Many students view drawing as a private activity. They do not want their peers to see their drawings, fearing that it is not good enough (Adams, 2014).

5.10 Attitudes towards drawing and sketching after the implementation of the learning and teaching strategies.

The aim of the question was to determine respondent's reflections on how the lecture and drawing exercises altered their views on drawing and sketching. Findings are presented in Figure 5.10 below.



Figure 5.10: Analysis of effects of the learning and teaching strategies on the attitudes towards drawing and sketching

Figure 5.10 shows that out of 22 respondents, 12 (54%) felt that they now realise that drawing and sketching has real benefits, 4 (18%) felt that it was freeing and 2(9%) felt that the lecture and exercises inspired them to draw and sketch more. On the contrary, 4 (18%) respondents felt that the lecture and exercises did not alter the way in which they perceive drawing. From the above it is clear that lecture and exercises had a positive learning impact on the majority of the respondents. By knowing and understanding drawing, students' learnings can be enhanced (Brett, 2012).

5.11 Developing an understanding of the importance of drawing and sketching

Figure 5.11 provides information on the extent that respondents developed an understanding of the importance of drawing as part of the design process after doing practical exercises.

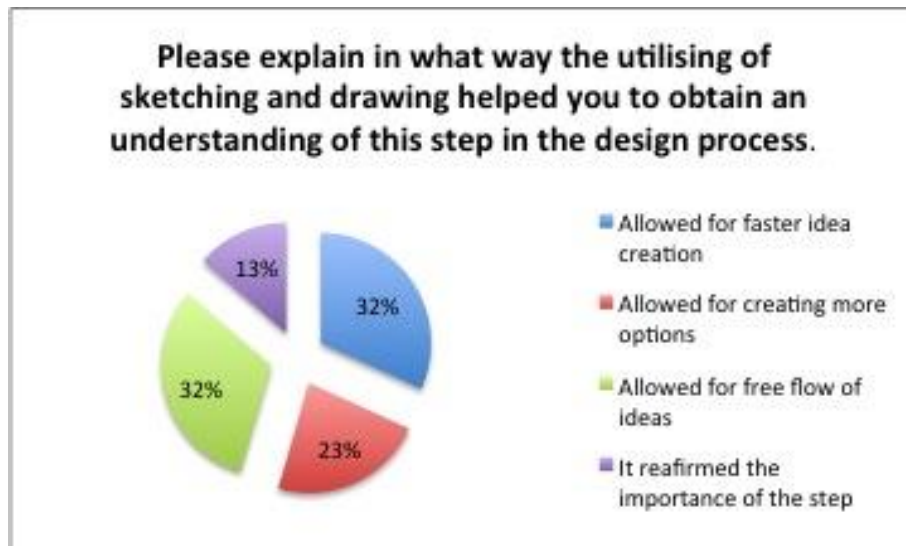


Figure 5.11: Analysis of the effect of a practical drawing and sketching exercise on the understanding of the importance of this step in design

Figure 5.11 shows 32% of respondents felt that drawing and sketching was important because it allowed for faster idea generation, while 32% noted that it allowed for the free flow of ideas. Twenty three percent of respondents reported that it allowed for the creation of more ideas and 13% of respondents felt that it reaffirmed the importance of drawing. All feedback was positive. The data shows that respondents have all understood, in various ways, the importance of drawing and sketching as a vital step in the design process. This finding supports Phyo (2013) statement that a designer's expression through the use of drawing is an essential emotion of thought and that hand drawing is an essential expression of the design process.

5.12 Perceptions of brief two – pen and paper only

Figure 5.12 provides information on how the respondents felt about the instruction of completing the brief using pen and paper only.

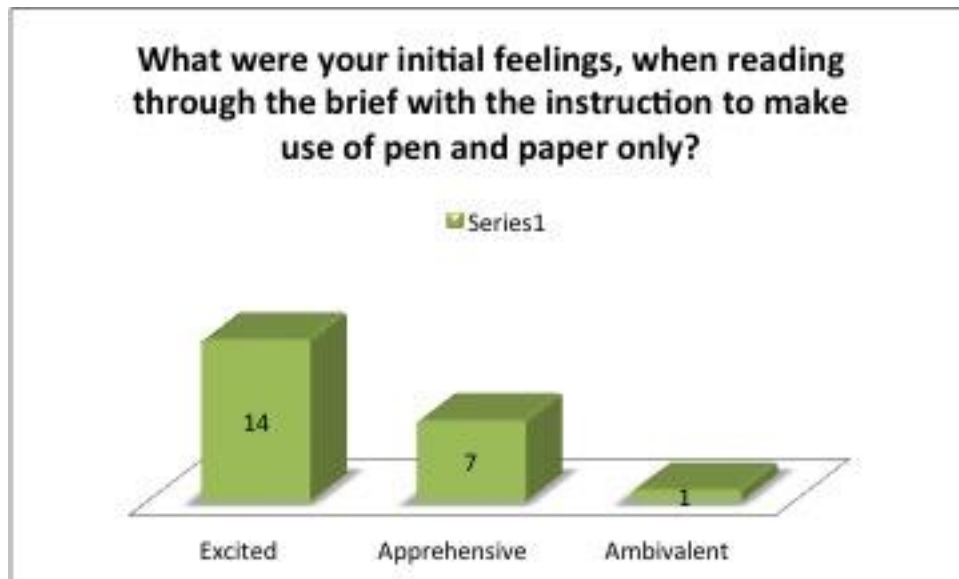


Figure 5.12: Analysis of the perceptions of brief two

Out of the 22 respondents, 14 (64%) felt excited, while 7 (32%) felt apprehensive and only 1(4%) felt ambivalent. This finding might imply that the majority of respondents got excited because in most disciplines drawing is somewhat underused and seldom taught at an undergraduate and postgraduate level as stated by Ridley and Rogers (2010).

5.13 Value of the fieldtrip

The aim of this section is to determine the value of the field trip as a cooperative learning method. Findings are presented in Figure 5.13.

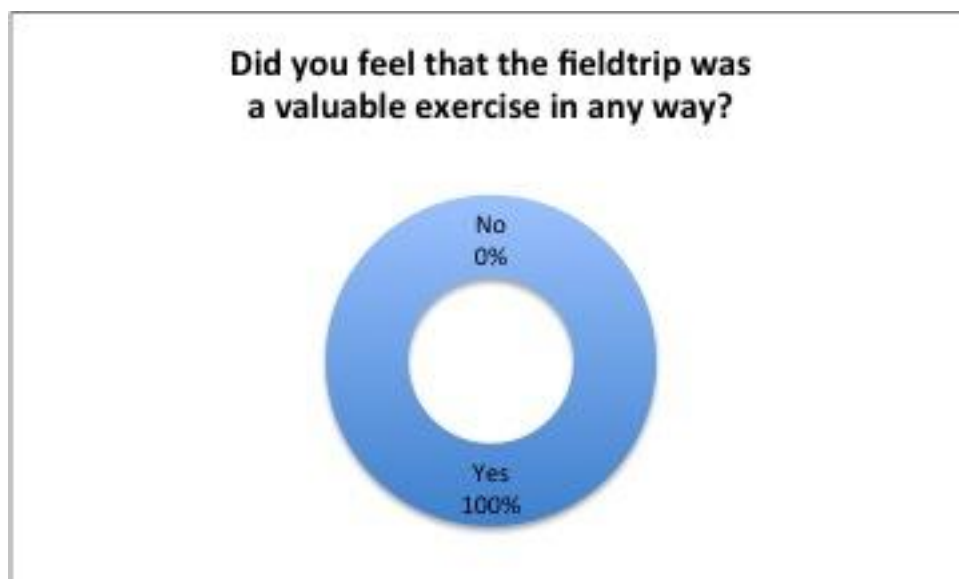


Figure 5.13: Analysis of the value of the fieldtrip

Figure 5.13 shows how valuable the respondents felt the fieldtrip to be in terms of visualisation and implementation of their drawing knowledge. This finding is in line with that of Limbu, (2012) who indicates that fieldtrips tend to be enjoyable learning experiences and as a result, respondents develop positive attitudes toward classroom activities.

5.14 The efficacy of the lecture

Figure 5.14 provides information on how much the lecture altered the respondents' perception on the benefits of utilising drawing and sketching in the design process.

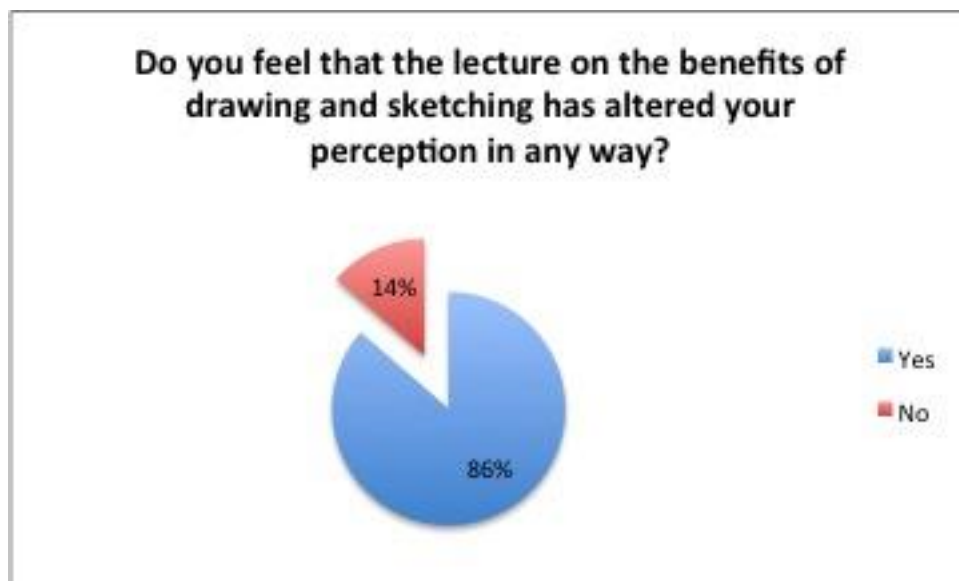


Figure 5.14: Analysis of the efficacy of the lecture

Figure 5.14 shows that 86% of respondents noted the lecture altered their perceptions, whilst 14% said that it had no effect. The above implies that the way in which the lecture was presented, was highly effective in shifting the respondents' perception of the benefits of drawing and sketching. This finding therefore implicates that future lectures can benefit from introducing new ways of delivering information and ideas. Fink (2013) states that the more frequently students encounter primary data in novel and interesting ways, the richer the learning experience.

5.15 Efficacy of the drawing exercises

The purpose of this section was to determine if the drawing exercises benefitted the respondents when completing the fieldtrip. Findings are presented in Figure 5.15 below.

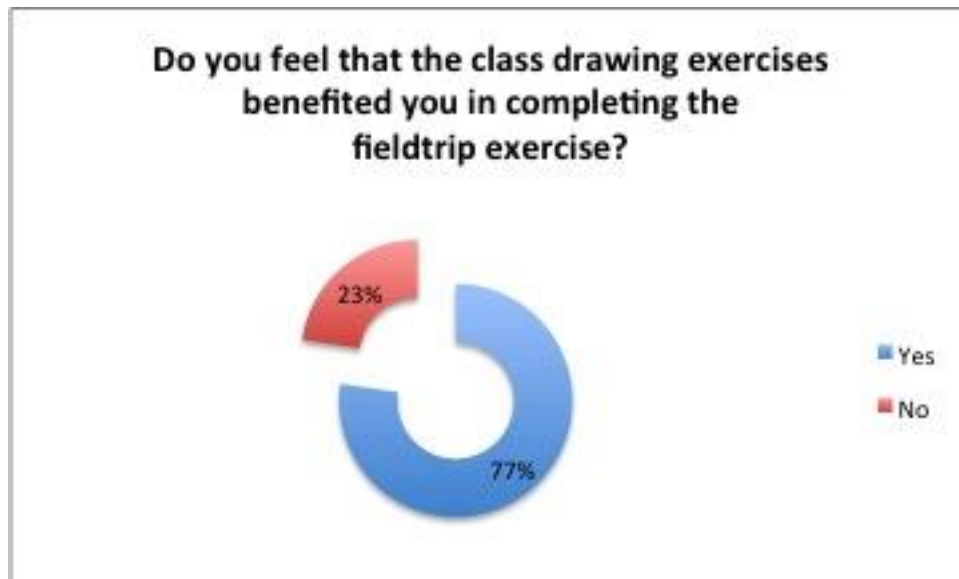


Figure 5.15: Analysis of the efficacy of the drawing exercises

Figure 5.15 shows that 77% of respondents felt that the drawing exercises were beneficial. Twenty three percent reported that the exercises did not benefit them in any particular way when completing the fieldtrip. This finding implies that by actively doing drawing exercises in class, respondents were able to transfer their newfound knowledge in a real life environment. Significant learning happens when students can connect what they have learned with their real life and not just with their 'course life' (Fink, 2013).

5.16 Number of concepts and ideas generated using pen and paper only

The aim of this section was to determine the number of concepts generated by respondents through the use of pen and paper only. Findings are presented in Figure 5.16 below.

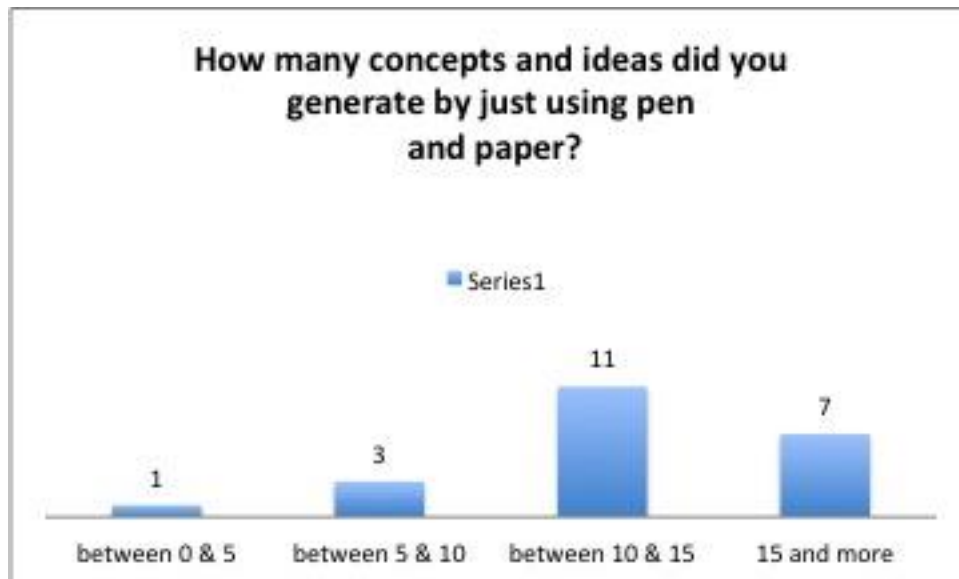


Figure 5.16: Analysis of the number of concepts generated using pen and paper only

Figure 5.16 shows that 11(50%) out of 22 respondents generated between 10 and 15 concepts and 7(32%) respondents generated more than 15 concepts. Three (14%) respondents generated less than 10 and 1(5%) respondent could not generate more than 5 concepts. This is noteworthy because it contrasts with the findings of question 6 (Figure 5.6), which shows that none of the respondents could generate more than 10 concepts by using only their computers. The value of this finding implies that respondents that use pen and paper during their idea generation stage of the design process are able to generate a greater number of concepts then using a computer only. Hodge (2009) states that drawing has always been seen as the most effective and quickest way in kick starting the idea generation process. By designing a strategy to include in and out of class activities to demonstrate the benefits of drawing and sketching has proven to increase the students' concept generating abilities.

5.17 Overall efficacy of the altered teaching and learning strategies

Figure 5.17 provides information on how the modified teaching and learning strategies have impacted respondents view on the use of drawing and sketching during their studies.

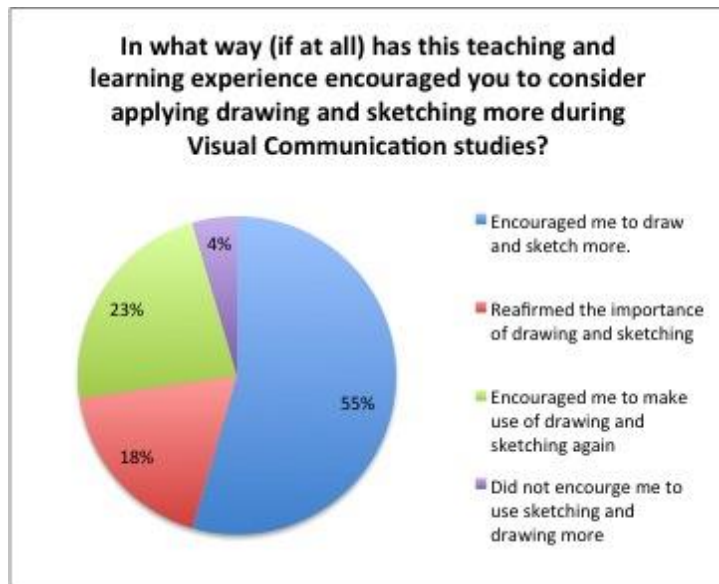


Figure 5.17: Analysis of the overall efficacy of the altered teaching and learning strategies

Figure 5.17 shows that 78% respondents felt that the process encouraged them to draw and sketch more during the design process. Eighteen percent of respondents felt that it reaffirmed the importance of drawing while 4% were not encouraged at all. The above implies that the altered teaching and learning strategies were very effective in encouraging respondents to make use of drawing and sketching as part of the initial phase of their design processes. The current module does not include drawing and sketching teachings. This absence has impacted on the respondents' use of it, especially during idea generation. Higher education institutions convey the impression that drawing should be seen as a valuable learning tool during a student's early schooling years (Ridley and Rogers, 2010). By modifying a teaching strategy within the module to include in class drawing exercises, an inspiring lecture and a fieldtrip, the majority of respondents were motivated and encouraged to use drawing and sketching as part of their design process.

6. Recommendations

The research at hand found that learning and teaching strategies can be successfully adapted to encourage the use of drawing and sketching in the initial stages of the design process. Not only was the feedback from the respondents positive in terms of the experience of the process, the findings clearly show that the respondents' willingness to incorporate drawing and sketching in future has increased. This was achieved by constructing a teaching and learning strategy comprising different elements. The use of a lecture, practical drawing exercises and a fieldtrip enabled the respondents to embark on a learning process.

Based on the findings and discussions it is recommended that visual communication students should be encouraged to utilise drawing and sketching more during the idea generation phase of the design process. Teaching and learning strategies within this module need to be altered. Such alterations can take the form of a combination of lectures, practical exercises and fieldtrips. It is also recommended that before embarking upon any modifications to the module consideration is given to the availability of resources such as time, financing, premises, materials and student transport. It is also advisable to secure the availability of specialists and experts that may be required to take part in the process.

A possible limitation of this study relates specifically to its focus on drawing and sketching within the field of design. Although the teaching and learning interventions were very successful in this area, it cannot be assumed that a similar process will also have a positive outcome in another discipline or field.

7. Conclusion

This research has shown that a teaching and learning strategy in the module of Visual Communication was successfully adapted to achieve the desired results. Students reported that the process was informative, enjoyable and educational, and that they were likely to include drawing and sketching in the initial stages of the design process in future. Future research in fields of study other than design could explore whether similar interventions might be as successful. Drawing is important in a wide range of disciplines. Attention to drawing needs to be drawn outside of the studio and reaffirm the importance of the pencil case (Adams, 2014).

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Annexure A

QUESTIONNAIRE

Dear respondent

You are requested to participate in research related to the value of drawing and sketching. The research relates to the completion of a postgraduate qualification in education and focuses specifically on the use of problem solving to learn drawing and sketching skills. The following questionnaire will be used to collect data that forms part of a research paper. The research focuses on the design of teaching strategies, specifically to encourage Visual Communication students to make use of drawing and sketching as part of their idea generation process, when solving a design problem. This questionnaire consists of 17 questions pertaining to the lecture you attended previously.

PLEASE NOTE THE FOLLOWING:

- **This questionnaire is completely anonymous and all information provided will be treated as confidential.**
- **Participation is voluntary and you can at any stage withdraw from the survey.**
- **If you wish to view the results of the data, you can make an arrangement with your lecture that will gladly share it with you.**
- **You will not be penalised in any way for not wanting to participate in this survey.**
- **Take your time reading and understanding the questions before answering them.**
- **Please don't discuss the questions and your answers with others while completing the questionnaire.**
- **Please try and complete the questionnaire in full.**

- Hand in the completed questionnaire to the lecturer.

QUESTIONS

Question 1: Did you understand the computer brief and what was required by you to complete it successfully?

(please tick the appropriate answer)

YES		NO	
-----	--	----	--

Question 2: What were your initial feelings when reading through the brief with instruction to make use of your computer only?

(select only the most applicable option from the list below)

Felt encouraged	
Had no specific feelings	
Felt motivated	
Did not like the brief	

Question 3: During the first exercise, did you feel comfortable completing the task by just using your computer?

(please tick the appropriate answer and give a short explanation of your choice)

	Tick	Explanation
Yes		
Mostly		
Not at all		

Question 4: Did you feel restricted by using just your computer to generate ideas and concepts?

(please tick the appropriate answer and give a short explanation of your choice)

	Tick	Explanation
Yes		
Mostly		
Not at all		

Question 5: How freely did your thought processes and creativity flow when using just your computer?

(please tick the appropriate answer and give a short explanation of your choice)

	Tick	Explanation
Over flowed		
Flowed		
Trickled down		

Question 6: How many concepts and ideas did you generate by using just your computer? *(please tick the appropriate)*

0 - 5	
5 - 10	
10 - 15	
15 and more	

**Question 7. Did you find the lecture on drawing and sketching?
interesting and enjoyable?** *(please tick the appropriate answer)*

Yes	
Fair	
Boring	
No	

Question 8: Did you enjoy the drawing activities in class?
*(please tick the appropriate answer and give a short explanation
of your choice)*

	Tick	Explanation
Yes		
No		

Question 9: Did you feel comfortable drawing in front of your peers?
*(please tick the appropriate answer and give a short explanation
of your choice)*

	Tick	Explanation
Yes		
No		

Question 10: In what way has the lecture and drawing exercises altered the way you feel in any way about drawing and sketching?

(please explain your answer)

Question 11: Please explain in what way the utilising of sketching and drawing helped you to obtain an understanding of this step in the design process?

Question 12: What were your initial feelings, when reading through the brief with the instruction to make use of pen and paper only?

(please tick the appropriate answer and give a short explanation of your choice)

	Tick	Explanation
Excited		
Apprehensive		
Ambivalent		

Question 13: Did you feel that the fieldtrip was a valuable exercise in anyway?

(please tick the appropriate answer and give a short explanation of your choice)

	Tick	Explanation
Yes		
No		

Question 14: Do you feel that the lecture on the benefits of drawing and sketching has altered your perception in any way?

(please tick the appropriate answer and give a short explanation of your choice)

	Tick	Explanation
Yes		
No		

Question 15: Do you feel that the in class drawing exercises benefited you in completing the fieldtrip exercise?

(please tick the appropriate answer and give a short explanation of your choice)

	Tick	Explanation
Yes		
No		

Question 16: How many concepts and ideas did you generate by using just pen and paper? *(please tick the appropriate)*

0 - 5	
5 - 10	
10 - 15	
15 and more	

Question 17: In what way (if at all) has this teaching and learning experience encouraged you to consider applying drawing and sketching more during Visual Communication studies?

(please explain your answer)

Thank you for taking the time in being part of this survey and completing the questionnaire.