

Praxis, analysis and synthesis: The research poster and presentation as a conduit between critical and creative thinking.

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Bio

Mike McAuley is the Program Director for the Bachelor of Design at Griffith University. Prior to this he was Head of Illustration at Massey University, Wellington N.Z (1995-2013) and Program director, Visual Communication Design at University of Newcastle (2014-16). He is a design pedagogy researcher and is interested in facilitating student learning and creativity through the development of explicit learning strategies. His most recent research focuses on the theory/practice relationship and how a praxis oriented approach can help students develop a deeper appreciation of how theory can inform and improve their creative practice. He has reviewed papers for DRS, Cumulus, LearnX and sits on the editorial board of the journal 'Art, Design and Communications in Higher education.

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Abstract

This action research study looks at the learning benefits of the research poster, not simply as a vehicle to discuss an individual's research, but as a conduit which assists student understanding of the relationship between theory and practice. It is argued here that the creative act of poster design and the support mechanism of an oral and screen presentation, combine as a form of praxis—a bridge between theory and practice— allowing students to combine their critical, analytical thinking with creative thinking. Data is based on a questionnaire, powerpoint presentations and research posters designed by third year design students at (University name and program removed). The findings suggest that together, the activity of designing a poster and presenting research findings, enable students to develop a deep understanding of how theory can inform and enrich their design work.

Introduction

This study seeks to frame research poster design around the learning benefits of theory/practice integration when undergraduate design students are engaged in summarising their own research projects through the format of a poster and presentation. In effect, the idea that a successful research poster is a consolidation and summarisation of many hours of inquiry involving analytical, critical and creative thinking, might allow us to explore the theory /practice relationship as well as the relationship between tacit and explicit knowledge and the value of reflection. Research posters seek to capture an audience's attention by displaying the essence of an on going inquiry in as succinct a manner as possible. (Hess and Liegel 2009). In relation to what a research poster seeks to encapsulate, Simon's (1969, p. 55) oft quoted phrase "everyone designs who devises courses of action aimed at changing existing situations into preferred ones" is possibly a useful way for us to think of the transitional relationship between the analytical, critical thinking that takes place when scoping and seeking to understand a problem and the synthesis which emerges in the format of a proposed novel outcome. While there are numerous design process models which seek to describe this transition towards a preferred outcome, few of us would disagree that, from an epistemological position, different types of

knowledge are called upon when engaged in a task which involves understanding the complexity of an issue and then seeking to provide a creative solution or response. The cognitive terms *analysis* and *synthesis* which we can trace back to Bloom's taxonomy of knowledge developed in the 1950's, have become very useful within the area of design pedagogy, as they have allowed educators to identify different attainments and competencies in their students' learning. They have also been used as the basis for a number of design process models.

To provide clarity as to the arguments being put forward in this study, it is important to mention that the key findings in this paper are based on a third year course at (University removed) titled 'Action Research 1'. Extracts from the course descriptor are as follows:

This course explores ways in which theory and studio practice may extend and challenge each other.

The inter-relationships between theory and practice are emphasised so that students are able to recognise their importance to the development of their own studio practice.

Figure 1. Extract of course descriptor.

At the end of the course all students present an A1 poster and give an oral and large digital screen based presentation. This will be discussed in depth later in the paper.

Discussion

There is an ongoing debate within the tertiary design education community as to how writing and designing should co-exist. There are those at one end of the spectrum who would argue that written discourse undervalues creative practice as valid research (Candlin, 2000), and those who would argue that writing is itself a form of design (Mitchell, 2000, Orr and Blythman, 2002). Strickler suggests we need an "empirical bridge between theory and practice" (1998, p. 38). However, such a bridge is difficult to build considering design students' visual, intuitive, kinaesthetic orientations which are not well suited to the analytical skills required for reading and writing critically (Apps and Mamchur, 2009; Bhagat and O'Neill, 2009; Blackler, 2014; Kelly, 2016; Yee, 2012;). Cross (2001), in relation to this divide between theory and practice reminds us that there are "designerly ways of knowing, thinking and acting", and he suggests that we "develop domain-independent approaches to theory and research in design (2001, p.4). Conole and Willis point out that most design educators' approaches to their teaching is implicit based. However, they argue "A key principle of learning design is to help make the design process more explicit and sharable." (2013, p.1). So, one might ask the question, how might the construction of a research poster, which by

its very nature requires different thinking methods, facilitate explicit understanding of design process?

Methodology and research design

The idea of action *and* research resides in the belief that a planned *intervention* (in this instance a research poster and presentation) can improve a situation (Hopkins, 1985 p. 32; Ebbutt, 1985, p. 156). Somekh, (1995, p. 340) suggest action research is a means by which we can create a bridge between research and practice, with the added imperative that the action component of research has had a positive impact and the research is able to verify the outcome. While action research sits comfortably within the domain of social science (McAuley and Roxburgh, 2017), it is unlike conventional forms of social science which remain “outside a situation” (McNiff and Whitehead, 2006, p. 8). They go on to say “Action researchers, however, are insider researchers. They see themselves as part of the situation they are investigating” (ibid).

The learning activity

The third year course *QCA 3602: Action Research 1* challenges students to develop their own socially relevant topic which can ultimately be addressed through each student’s own creative practice in *QCA 3604: Action Research 2*, the follow up course which students do in the following trimester. It follows the action research imperative of identifying a social problem which can ultimately be addressed, resolved, challenged, highlighted or critiqued through design practice. Initially it asks students to identify a problem and then look for appropriate academic literature which will help them develop an informed position on the topic. Some students will, as a consequence of their chosen topic, decide to do interviews, questionnaires, surveys or fieldwork visits which may include sketching or taking photographs. Others will conduct content, thematic, comparative or semiotic analysis of existing imagery if appropriate to the research being carried out. Exploratory iterative creative practice is also encouraged from the beginning, whether it be in the form of rough sketches, or material experimentation. There are three assessable items. The first two are preliminary and preparatory, 1. Initial research proposal. 2. Annotated bibliography. The third, final and by far the largest assessment item is a research poster presentation which is given at the end of the twelve week course. The students themselves identify as majoring in a variety of disciplines such as graphic design, digital media, fashion, product and interior design. Ninety four students completed the course and 48 students gave their consent to participate in the research. As all students are in their third year of study, with similar

experience of design, as well as having studied a common first year, this group is identified as a homogenous sample (Patton, 2002).

Data

The data is based on:

1. A questionnaire which had five open ended questions. (Patterns of similarity were looked for)
2. A1 printed research posters. (A content and semiotic analysis was carried out)
3. Digital presentations (Analysis of the integration and co-relation between written text and images was carried out)

Analysis

Q1. Please describe what you see as the purpose of a research poster.

Most students saw the research poster as a method of consolidation. While *summarise* was the only recurring verb (12 students), patterns of semantic similarity were recognised: *get across the basics, gather up, compile all your research, succinct*. A minority of students who didn't discuss the summary aspect of posters in relation to getting across key ideas as to the intent of the research, focused more on the design challenge of capturing attention and displaying information in a poster format. The most common verb was *display* and its connected noun *information* (5 students) with numerous comments of semantic similarity: *convey information, displaying information, display and communicate, spread information*.

From consolidation of research findings being the main activity captured in question 1, the next question sought to determine how students went about designing the poster.

Q 2. Please describe your process for creating your research poster, i.e. how you went about narrowing down its content, both visual and textual.

The overall thematic to student responses was that the process began as a critical, as opposed to a creative exercise, essentially one of consolidation of written text and categorisation of information. Students overall based their approach on determining which sub headings were most appropriate for their research. They were asked to consider the importance of the title, possible research question and a quote from the literature which could be highlighted. All other sections were open to student choice with the exception of the

final section which was to be described as *creative synthesis*. This final section allowed students to describe the design work they intended to focus on producing in trimester 2. As students had a word limit for the poster and the requirement to have sub headings, their process was one of working within limitations.

Q 3. What did the generation of the poster teach you about your research?

Responses were positive and reflective, helping students to synthesise the wide body of work gathered throughout the project and bring the important bits together in a structured way, pointing towards creative solutions. A recurring theme was that by working to the restriction of simplifying everything down to a limited word count and structure it helped students develop a deeper understanding of their topic. The following comments capture the overall student experience.

Really helped me narrow down my research to the most important aspects to focus on.
Also gave me inspiration on possible solutions. (student participant)

Made me think about how my own work, and if I can actually do something useful to social issues.
(student participant)

I realised how important it is to use content that has direct links to the topic and not waffle on
about things. (student participant)

It helped me think more about what I was trying to do (student participant)

It taught me that while it's good to have lots of information, it is important to refine your
research and pin point the key ideas or concepts. (student participant)

Figure 2. Representative comments on students conceptions of the role kinaesthetic activity played in developing understanding of the theory/practice relationship.

There is significance to these representative comments. I would argue here that if students had been asked to write an essay to describe their research, they may have had less of a connection to what they were doing. It can be argued that summarising helped students see what was important to them at a personal level. As Mayer points out, learning is about making sense of material that is presented to a learner. Learners can therefore be described as “sense makers” (1996, p. 364). We can perhaps make a connection here with Krippendorf (1995) who talks of design as a sense making activity. Referring to the etymological origin of design from the Latin term *de+signature*, to *give significance*,

Krippendorff says, “Based on this original meaning, one could say: design is making sense (of things)” (p.56). So, perhaps this is where we can further compound our understanding that designing means much more than making artefacts. Question 3 flowed on to question 4 which was a direct attempt to determine student understanding of the theory/practice relationship.

Q 4. What role did the production of a research poster play in helping you understand the relationship between theory and practice?

Student replies revolved around their own projects as opposed to theory and practice in general. However, what pattern did emerge from student replies was that designing the research poster really helped students make connections. The most common recurring verb was *help* (14 students) or its variation *helpful* (nine students). Comments by students talked about the role visualising ideas, through the use of graphs, diagrams and illustrations had on making connections. The two statements below are fair representations of what many students said.

Using graphics helped me in making connections between different elements of my research. In doing this I gained a much stronger understanding of what I was researching.
(student participant)

Being able to create a visual version of my research helped to keep both my interest and make unseen links. (student participant)

Creating graphics really helped as well as it is a legit visual representation of hard facts that helped me to cement the relationship between theory and practice. (student participant)

It made me realise that theory can help me come up with better ideas. (student participant)

Figure 3. Representative comments on students conceptions of the role kinaesthetic activity played in developing understanding of the theory/practice relationship.

As discussed earlier, design students have a preference for learning through kinaesthetic, visual means, something which Blackler, (2014); Edwards and Woolf, (2007); and Grow (1994) define as *visual thinking*. Irwin (2003, p. 63) calls it “aesthetic knowing”. Student answers to the question suggest that the activity of pulling written information together and adding graphs, pictures and diagrams did appear to act as a bridge between theory and practice.

Presentation of student research

We can perhaps taxonomically, or for convenience sake at least, place students' theoretical explorations in their course of study under the banner 'analysis' and their subsequent proposals to make designs which respond to their theoretical enquiries as 'synthesis'. If we accept that then we can describe an oral presentation as an 'evaluation', tying nicely back to Jones' three stage design process model, *analysis, synthesis, evaluation*. The final question in my questionnaire was Q 5. *What role did visual presentations to an audience play in helping you develop an understanding of your research objectives?* While many of the students mentioned the value of feedback from peers, there were some interesting observations made which are worthy of some scrutiny in relation to how students learn. A number of students mentioned that the act of presenting gave them a deeper understanding of their topic.

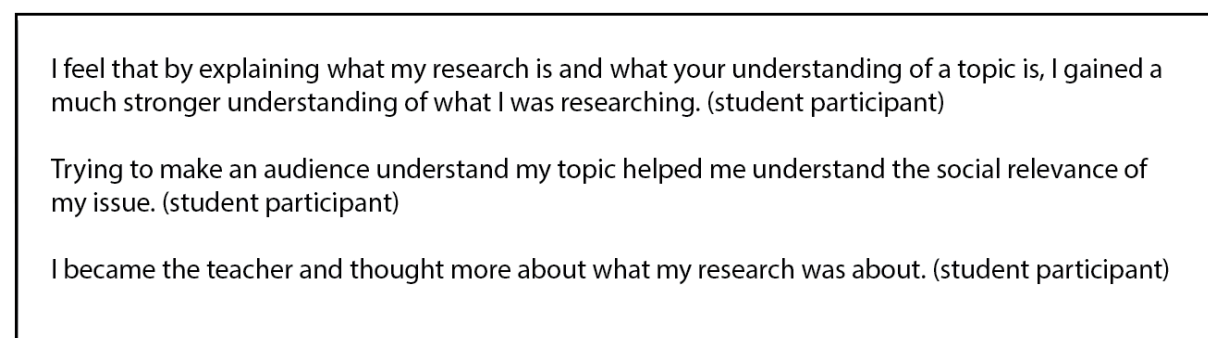


Figure 4. Representative responses to question about how presentations consolidate learning.

At the heart of student replies was a recurring theme that appeared to indicate that presenting work visually and orally, aligned to the idea that the objective of the presentation was to explain research, was of great benefit to the students. As Cross points out, "education must be designed deliberately to enhance and to develop students' intrinsic cognitive processes" (2007, p. 20). As we have already argued, design students have a visual orientation which appears sympathetic to compiling ideas visually on a poster, but also via a digital screen. Students were encouraged to ensure that their presentations followed the academic protocol of *claim* supported by *evidence*, requiring them to refer, where appropriate, to academic literature and use graphs, illustrations, diagrams and so forth to compound the legitimacy of their claims. Some students presentations used a wide range of multi-media possibilities including sound, animation and film, all in support of their academic 'argument' contained in their research poster. Figure 5 is an example of a project which looked at E-waste, and some of the data which highlights the problem. The poster and the presentation contained well gathered data from various sources as to the extent of the problem globally, proposing that active campaigns instigated through marketing design can

help change behaviour habits. Ultimately the student's plan was to design a public awareness campaign of the dangers of E-waste in China, the student's homeland.

An interesting correlation between the research posters and the digital screen presentations was the consideration given to the titles. A semiotic and content analysis of the 48 posters established that, with few exceptions, the majority of students developed intriguing titles, many of which were plays on words. For example 'Barrier to Change', (figure 5.) discusses the political problems faced with protecting the Great Barrier Reef, playing on the word barrier to get across the idea of resistance to change. The poster title 'Femenism', (Figure 6.) had a graphical treatment which enlarged the letters '*man*'. to focus viewer attention on the theme of the research which was about male attitudes towards feminism. The colour pink added further cultural context, demonstrating how colour can be used within a research thematic to communicate a research aim.

A title, while serving the function of capturing the condensed essence of a research inquiry can, it is argued here, be regarded as creative synthesis, a means by which words are used creatively to encapsulate ideas which have emerged through analytical and critical inquiry. In some respects I would argue that a well considered, creative title in a research poster can consolidate so much of an inquiry, something which Kinsch (1998) describes as a *macroproposition*, the summarised essence of a body of text. This further emphasises the opportunity students have to create a bridge between their critical inquiry and their ability to creatively use semiotic coding to convey ideas. Figures 7 and 8 are further examples of how students have been able to summarise and capture the thematic of their research through their chosen titles.

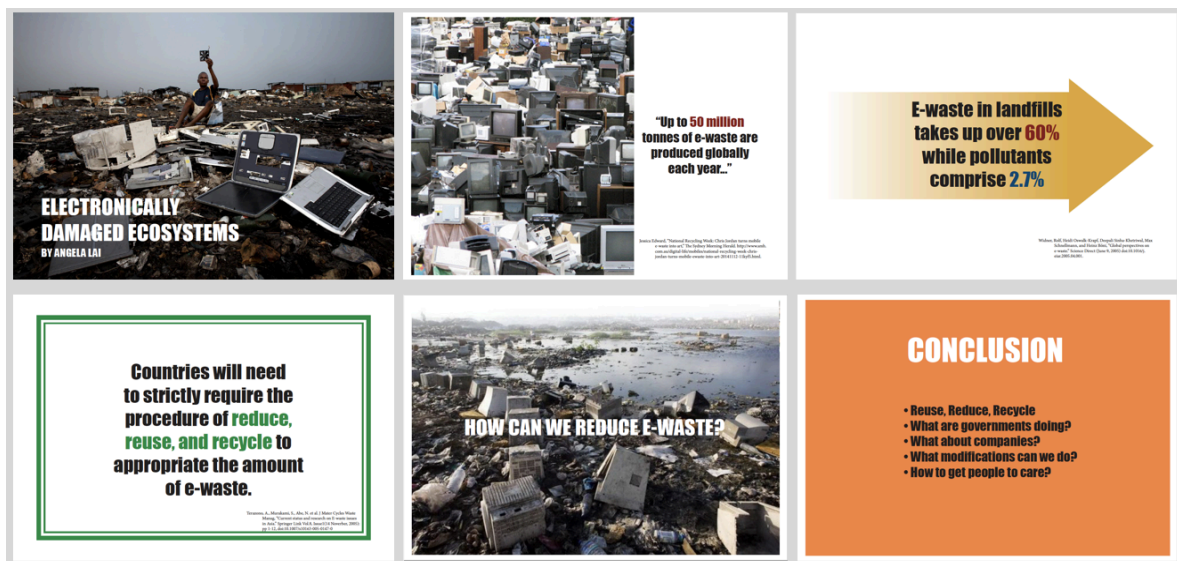


Figure 5. Excerpts from project which seeks to determine what design can do to minimise E-Waste.



Figure 6. Excerpts from project on the threats of rising sea levels in Queensland.

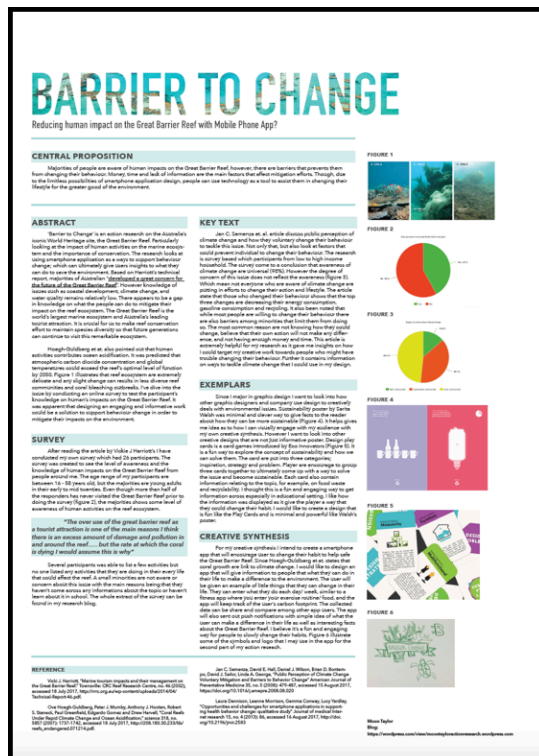


Figure 7. Student research posters incorporating graphs, illustrations and diagrams and a play on words. Overall, a bringing together of analytical, critical and creative activity.



Figure 8. Examples of poster titles which conceptualise themes. 'Femanism', focuses on encouraging men to get involved in feminist issues. 'Alternative native awareness' targets young people to become more aware of their environment.

Conclusion

As mentioned earlier in this paper, Strickler (1998) calls for an 'empirical bridge between theory and practice'. Cross (2007) tells us there are 'designerly ways of knowing', and that we, as design educators must do what we can to develop our students 'intrinsic cognitive processes'. And Mayer (1996) talks of learners as 'sense makers'. This paper has attempted to identify and perhaps elevate the research poster and presentation as a vehicle for

achieving what Strickler, (1998); Cross, (2001, 2007); Mayer, (1996); Krippendorf, (1995); Simon, (1969), and a multitude of other design theorists have called for as regards how we can generate knowledge about design and bridge the gap between theory and practice. From a research perspective this first cycle of an on-going action research enquiry has put forward the learning benefits to students when tasked with consolidating their academic research through the format of a poster and presentation. The questionnaire used in cycle 1 was really useful, but a second cycle of inquiry should include additional questions and follow up interviews which go more in depth as to how student's understand the theory/practice relationship. Finally, we often ask our students to reflect on their learning and in a sense bring tacit knowledge to the surface as explicit knowledge. And yet, without incorporating explicit methods to enable deep reflection to take place, we are possibly only skimming the surface of designerly ways of knowing. Nevertheless, the argument that been put forward here is that research posters and presentations as praxis, can indeed be part of the theory/practice empirical bridge.

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