Cartooning and Mind Mapping in the Doctoral Journey

The Impact of Visual Representation in a PhD

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Abstract

This article is a commentary of the author's experiences with visual representation as a doctoral candidate. It is an autobiographical reflection of her doctoral journey towards a PhD in education, a mixed methods study which explored teaching for creativity and creative processes for music educators. The author reflects on the experience of engaging with her own work visually via cartooning and mind mapping, and what this meant for her studies and her experience as a research student. The author hopes that this can offer a scope for reflection to readers who are doing similar types of studies or intend to engage more creatively with their doctoral studies. The article aims to demonstrate the benefit of cartooning as a self-expressive tool for the PhD candidate and to show the value of visual representation through mind mapping in the process of data analysis.

Keywords

creative process – visual representation – doctoral journey – cartooning – mind mapping – learning maps – arts-based research

1 Background Statement

My PhD is an investigation into the ways in which teachers in Victorian primary schools teach for creativity and engage children in creative processes, particularly in music education. I was led to this topic because of

the findings from my previous research about the music activities delivered by primary school teachers (King, 2015). The findings from that study showed that whilst music activities were a regular feature of the class activities by each of the three participants, these teachers, for various reasons, rarely engaged children in creative processes in music such as improvisation and composition – principles that are central to the art form. The findings spurred me onwards towards commencing a PhD to investigate how and why teachers do teach for creativity, in any area of the curriculum and including in music, with the aim to adapt those strategies into a framework to guide teachers to engage children in creative work. Creative process became a central focus of my doctoral research. It spurred other creative work such as cartooning and mind mapping within the doctoral journey itself. This article explores creative process and the doctoral journey, respectively, as contextual themes. The key focus of the article is the commentary and presentation of cartoons and mind mapping examples as they occurred within my doctoral journey.

2 An Unlikely Cartoonist on the Doctoral Journey

As a professional musician and performing arts (music, dance and drama) teacher educator, it was not expected or predicted that I would begin drawing cartoons about my PhD experiences three months into my candidature. It is difficult to track the reason for it because there were a range of influencing factors which prompted the drawing of my first cartoon. Admittedly, I have always appreciated the visual arts and attended gallery exhibitions where possible, and although I never went beyond senior high school level in learning to draw, I liked drawing and always kept a sketch book at the ready during my adult life. As a performing arts teacher educator, I understood dramatic elements of dialogue, character and symbol (Russell-Bowie, 2012), each of which were evident in my cartoons. As a professional wedding singer and MC of many years I had learnt the value of humour to entertain audiences. The main influence, however, must be attributed to my avid interest in the creative process, the key topic of my research. Although improvisation in music was one way in which I enacted creative process in my life as a musician, the expression of my ideas, thinking and reactions to and about the doctoral journey was channelled into visual representation through cartooning.

The doctoral journey is considered to evoke change and transformation in candidates in the “journey to becoming researchers” (Batty, Ellison, Owens,

& Brien, 2019, p. 1), and this alone could have spurred a change of my expressive focus into cartooning. The path through a PhD has been referred to as a doctoral journey. The concept of travelling or journeying in the doctorate is emphasised by Forrest (2003) "The doctorate is in many ways an odyssey ... a trip, pilgrimage, voyage, expedition or passage" (p. 3). Russell-Bowie (2003) described her journey as "sailing in uncharted territories, at times surrounded by threatening storms, at other times tracking through becalmed and windless waters" (p. 52). Batchelor and Di Napoli (2006) similarly refer to doctoral researchers as voyagers who "travel from familiar inner and outer landscapes into unknown territories with new horizons" (p. 13).

The doctoral journey is different for all candidates yet is generally marked by challenging but transformative times. Wellington (2005) states, "The doctoral journey is a long and often arduous one," where, "those who undertake this journey will have been affected and changed by it" (p. 30). Reflecting on his own doctoral journey, Smith (2003) refers to this change, "The process is radically transformational. After this amazing journey of self-discovery, we can never hope to be the same again" (p. 66). In the doctoral journey, "researchers-as-voyagers are engaged in a process of becoming, and of discovering a voice" (Batchelor & Di Napoli, 2006, p. 13). It was the element of "becoming" which was particularly present during my doctoral experience, shown in the honing of a voice of my experiences, expressed through visual representation through cartooning and mind mapping. Cartooning, particularly, was a way to make visible the "invisible thinking" (Batty et al., 2019, p. 1) that is part of the process of completing doctoral research.

Visual representation through cartooning, whilst it became a feature of my doctoral journey, was not a part of my PhD investigation. My investigation took the form of a mixed methods study (Creswell, 2014) with a pragmatic worldview, underpinned by social constructivism. The research design involved a document analysis of curriculum and policy in arts education (specially music) over sixty years in Victoria, an online survey and individual semi-structured interviews with twelve participants. It did not involve creative methodologies (Kara, 2015) in which visual arts may be feature in data collection. I did not utilise visual representation to communicate with participants (Whiting & Sines, 2012) nor did I ask them to engage in creating visual representations of the research themes (Wheeldon & Ahlberg, 2017). Mind maps feature in my thesis, but the cartoons do not. My study is not practice-based research in the arts or in visual arts (Forrest, 2017). And whilst the wonderful cartoons of Jorge Cham's (2016) *PhD Comics* were a regular

part of candidature conversations at university, shared in delight with me by fellow students and supervisors, the idea to explore visual representation through cartooning to share my own personal experiences of candidature, had not at all been part of the research design or plan.

3 Cartoons

A cartoon is defined as, “A simple drawing showing the features of its subjects in a humorously exaggerated way, especially a satirical one in a newspaper or magazine” (Oxford Dictionaries, 2018). Cartoons depict their author’s thoughts or communicate a specific message. Leunig (2018) a famed Australian cartoonist, states, “Cartooning is a universal folk art that is mostly self-taught. It generally employs drawings and symbols, which because of their primal, sub-literary nature may easily side-step the intellectual defences of the reader or viewer” (para. 1) and that “cartoonists are sometimes guided by an instinct that compels them to be humorous in the midst of great seriousness ...” (para. 8).

Cartoons have long been a source of entertainment in popular culture. Comic strips and cartoons are part of our everyday lives, from newspapers to television, animation to film. The Avengers movie series (Marvel, 2019) is an example in current popular culture of the extension of cartoon relative’s comic strips into the genre of film. These movies feature the Hulk, an iconic character created by Stan Lee, which was initially drawn in comic strip form by Larry Lieber in 1978 (Marvel, 2019). The Avengers character of the Hulk, when he was not the Hulk, was Bruce Banner, who interestingly, for the discussion of the doctoral journey at hand, held seven PhDs. It could be assumed that it was rather his seven PhDs – and perhaps not just the overdose of gamma radiation – that turned Bruce Banner into the Hulk (quite understandably) in which such a doctoral journey narrative would be an interesting reflection indeed. My own doctoral journey narrative was less extreme and took the form of cartooning, reflecting three clear categories of experiences; reading, writing and research-related thinking, life as a PhD student and personal reactions.

4 The Cartoons and Commentary

My first cartoon was intended as a light-hearted look at the seemingly endless exploration of the literature in the “sandpit” phase at the beginning

of my study (Figure 1). Several people such as my best friend, my supervisor and a couple of PhD peers appreciated the image and encouraged me to continue to draw about my doctoral experiences. The initial positive feedback spurred my confidence and in the months of the first year of the candidature the cartoons became a regular part of the reading, writing and thinking process, and were a part of supervision conversations. Cartoons were an example of reflection about my learning progress (Schön, 1983) and were a record of events, similarly to the use of a journal and as such, the images showed how “drawings freeze time” (Farthing & McKenzie, 2014, p. 41). Additionally, the pragmatic rationale I designated for my use of cartooning was that it did not have to be – no pun intended – a “drawn out” process. A brief five-minute drawing for expressive purposes was completely justifiable in my self-directed timetable as a part of the day’s reading and writing.

FIGURE 1 The sandpit

The cartoon category of academic writing and research thinking is demonstrated in Figures 1 and 2. Figure 2 *Assertive Language Dictionary* represents my learning curve from writing passively towards finding a voice of authority. This cartoon includes the use of the visual arts and drama element of symbol (Russell-Bowie, 2012), in which the bucket of sand from the sandpit phase continued to be hauled around in this and other cartoons. It was a symbol that continued from Figure 1, which I featured in a number of the early cartoons to represent my sense that I was still very much at the start of my doctoral journey.

FIGURE 2 Assertive language dictionary

A second category of cartoons emerged, showing other aspects of my experience and life as a PhD candidate. Cartoons in this category were often related to organisation of time and the feeling being at times overwhelmed by the workload, such as shown in Figure 3. This cartoon shows the reoccurrence of the bucket of sand symbol in my hand. This time there are small structures built into the sandpit, to show that it is no longer a flurry of papers, but rather that the thesis writing has begun.

FIGURE 3 PhD trees

The third category of cartoons were about the doctoral journey as challenging and transformational. These drawings were more self-reflective and personal. These were not usually a part of supervisory meetings but rather for personal journaling. Figure 4, titled *Coming Apart* showed that whilst my literature review was themes and writing was starting to take shape, the new learning curves I experienced as a researcher were pulling apart my old thinking, the old “me”. The *Mirror Moment* (Figure 5) was about being overworked on the computer and the effect the limited amount of physical exercise. I had previously been very physically active in my career as a professional wedding singer, primary school teacher, music teacher and dance teacher.

FIGURE 4 Coming apart

FIGURE 5 Mirror moment

Finally, in later phases of my candidature, other cartoons were drawn which were more critical of the journey. For instance, the slightly cynical notion of jumping through hoops (Figure 6) as part of my experience of being a PhD candidate and that some of those hoops were self-imposed. Figure 7 shows a justification for my own cartooning and was one of the last cartoons of my candidature. It depicts a spider and a fly having a conversation which associated the cartoons with the expression of truth and wellbeing.

FIGURE 6 The road to a thesis

FIGURE 7 The spider and fly

5 Observing Creative Process in Cartooning

Through cartooning, I observed the creative process. Wallas's (1926) *Four-stage model of creative process*, which was a key theme of my literature review, was also under my own unofficial but quite literal observation – within the cartooning – in the early phase of the study. Research into

creativity has been traditionally and necessarily classified as the four p's; person, product, process and press (environment) (de Sousa Fleith, 2000; Runco & Albert, 2010). Renown in the creativity literature as the standard model to depict the creative process is Wallas's (1926) *Four-stage model of creative process*. It consists of preparation, incubation, illumination and verification. Lubart's (2018) definition of creative process is that it is a series of thoughts and actions involved in developing a product that is original. Csikzentmihalyi (2014) used the term *flow* to describe an effortlessness within the creative process reported by a number of individuals from a wide range of disciplines. The way the term was applied by Csikzentmihalyi (2014) was to the sense people described as "standing to the side of normal, everyday existence" (pp. 230–231) and "you are at one with your actions" (p. 231), and that flow is "essential component of the creative process" (p. 230). As I worked on my literature review, I considered these theories in application to my own creative work through cartooning. In effect my literature review came alive through the cartooning work.

Other creativity research echoed through my unofficial observation of creative process in cartooning. For example, I observed that I was motivated in a social context (Amabile, 2011), there was a great deal of problem solving (Runco, 2014) regarding my self-taught approach to cartooning, and much decision making (Sternberg & Kaufman, 2018) about the topic of drawings and within the process of drawing itself. The concept that creativity is about action through making and doing was clearly evident (Prentice, 2000; Robinson & Aronica, 2015), differentiating creativity from imagination. Through the process of "doing" the cartoon would usually alter or evolve into something else from the original thought. At other times, drawing was not premeditated at all, it simply grew out of a line on the page; an observational experience of flow theory (Csikszentmihalyi, 2014). The medium impacted the expression (Dinham, 2016) again curtailing and focusing the presentation of the image. There was an increased understanding of the impact of diversity of multi-disciplinary experiences on the creative output (King, 2018).

Of the elements of creativity research I observed, the most evident was the sense of risk taking. This was shown first in daring to draw the cartoon to begin with, and subsequently in choosing to share the image with others. As a result, certain cartoons were purposefully drawn with the consideration of audience at the outset. Risk taking can be dangerous – one's ideas are exposed as they are made visible to the public. In contrast, I found that the field of music tended not to be a space for engaging in such communication – melodically or rhythmically, of such direct issues, in which the pen was for

me, much more descriptive and poignant. The realisation of the power of visual image and the potentiality of self-expression was an important outcome of the cartooning experience. In total there were over thirty cartoons of my doctoral journey.

6 Mind Maps

Mind maps were the other way in which visual representation and expression was a key part of my doctoral work. Through mind mapping, I was able to work intensely with the data generated from the twelve interviews I had conducted. Maps in general are appropriate in the discussion about journeys, as the two have a long association. As Forrest (2003) stated about doctoral research, "Journeys are undertaken with literal or metaphoric maps – made and unmade" (p. 3). Mind maps were a very literal type of map in my research. The mind maps were generated within a computer program which provided an essential feature that they were interactive maps, which could be made and remade, over and again, to assist with the emergence and crystallisation of specific themes and ideas. Whilst the cartoons had been quite often metaphoric regarding experiences along the journey, the mind mapping process was intensely practical.

Mind maps are a visual organisation tool. Chang, Chiu and Huang (2018) refer to Buzan and Buzan's (1996) concept of using graphs to improve peoples ability to think – such as a mind map. Chang et al. (2018) state, "A mind map is the use of images to present the thinking surrounding a central theme. Each idea is presented as a node on the graph and can be linked to the sematic relations of other nodes ... a highly dynamic instrument for reorganizing ideas" (p. 5). Mind mapping has a place, although somewhat minimal, as a qualitative research tool. Wheeldon and Ahlberg (2017) investigated the use of mind maps as a tool for qualitative researchers to "plan their research, collect qualitative data, analyse what they have collected, and present findings" (p. 1). A specific use of mind maps was reported in Whiting and Sines's research (2012) to "seek participant verification of an emerging framework" (p. 21). But it was in Kotob, Styler and Richardson's (2016) research, however, that use of mind maps was focused mainly on data analysis, which was the case in my own study. About the use of mind maps as a potential analysis tool, Kotob et al. (2017) state, "With a lack of evidence and information about the process to use for analysing semi structured interviews data by using the mind mapping technique, mind mapping may constitute a viable and complementary approach for

conducting research analysis which is not covered extensively in existing literature and is worth further investigation” (p. 249). Mind mapping was certainly “viable and complementary” in my data analysis process as an initial to explore the data visually.

7 The Place of Mind Maps in my Doctoral Study

As was the case in Kotob et al.’s (2017) research, the use of mind maps in my study was part of the process of data analysis of a set of semi-structured interview transcripts. In my study, twelve participants had been interviewed and the transcripts from those interviews totalled approximately 60,000 words. It is important to note that the interview instrument (and the survey instrument before that) was structured around six key topic areas. I retained the six key topic areas as a frame in which to initially approach the analysis of interview data. Each key topic area became the central theme for one mind map. In this way, the key topic areas were like broad pre-determined codes (Creswell, 2014), or themes. The use of these predetermined key topic areas was helpful for the initial organisation and viewing (through the mind maps) of the data but it later limited the scope of the analysis. As Creswell (2014) notes, “the traditional approach in the social sciences is to allow the codes to emerge during the data analysis” (p. 248). Whilst the emergence of codes did occur to a degree through the mind mapping process, as described in following paragraphs, the central theme in each mind map – the key topic area – later became a limitation and prompted the use of other analysis techniques to build on the analysis from the mind mapping process.

8 Visual Representation of Data Through the Mind Mapping Program

Prior to using the mind mapping program, the twelve interview transcripts were uploaded into the coding program *NVivo* for an initial round of coding. This resulted in a long list of descriptive codes and relative *in vivo* fragments, which were organised into the six predetermined key topic areas. I was interested in seeing the data on one page rather than in a linear list and decided to experiment with a mind map program. At that point I downloaded the list from *NVivo* and literally transferred the data straight into the mind mapping program, that is, I manually typed every part of the list into *SimpleMind Pro*, the mind mapping program I had selected. The

organisation of the mind map was that the central theme for each mind map was one of the key topic areas, the descriptive codes for that key topic area were the first branch of nodes (child nodes) and the *in vivo* fragments relating to each descriptive code were the second brand of nodes (grandchild nodes).

My associate supervisor had recommended the use of a mind mapping program during a supervision meeting at the time I was commencing the analysis of my interview data. Her intention was that it would assist in the formulation and thinking about the themes I would draw out of the analysis. It was a positive suggestion for me yet quite the opposite occurred. Mind mapping became the tool in which part of the analysis took place. With the descriptive codes and the *in vivo* fragments now in the mind mapping program, I was able to see and work with a large part of the data in a visual and interactive way. I began rearranging, regrouping and overall reworking of the placing of codes and fragments. This altered the mind maps, at times quite radically, to reveal new clusters of themes which partly contributed the final emerging themes of the study. The mind maps were giant landscapes of descriptive codes and *in vivo* fragments, a spidery plant-like jungle of ideas. The visual and interactive aspect of the mind maps allowed for “creative and at times even playful meshing” (Bazeley, 2012, p. 819) of *in vivo* fragments into themes, as they were moved to new positions, allowing a sense of “serendipity and openness to new ideas” (Bazeley, 2012, p. 819).

9 Stages of Mind Mapping

There were three key stages of mind mapping towards the development of themes and ideas. First, there was regrouping and new connections, which was the movement of the *in vivo* fragments and previously labelled descriptive codes to form new groupings and thematic ideas. The second stage of mind mapping was the spider web connections which were lines that were additionally added to interconnect different codes and fragments outside their “families”, thus creating new thematic links or extensions or arrows to and from established themes (Figure 8 and 9). The third key stage was the addition of either blue text bubbles to indicate broad emerging ideas (Figure 10) and the altering of the colour of specific nodes to indicate an emerging theme (Figure 11).

FIGURE 8 Spider web links of in vivo and descriptive codes

FIGURE 9 Spider web links and arrows

FIGURE 10 Blue bubbles added to indicate four emerging themes

Figure 10 shows four emerging broad ideas indicated in medium blue bubbles “Being a teacher”, “Answers”, “Issues”, and “About creativity.” These were added after the regrouping of descriptive codes, to indicate broad emerging themes relating to the descriptive codes in that area. Moving the *in vivo* fragments showed new connections. These were given a different colour as a marker. For instance, in the Figure 11, the theme relating to imagination and to children “being themselves” was first evident in the bringing together of groups of descriptive codes. This was indicated by changing the colour of the relevant nodes into pink.

FIGURE 11 New groupings of in vivo and descriptive codes, shown in pink.

10 Positives and Limitations of the Mind Mapping Process

The mind maps were very detailed, some had up to 200 grandchild nodes (*in vivo* fragments). The aim to have all key topic codes visible per page and have them as moveable items was met. The *in vivo* fragments were moved around and at times were shifted completely away from their relative descriptive code. The descriptive codes were moved around also and grouped together. New groupings were formed, new themes became visible. Due to the nature of mind maps – with one central theme only – the rearranging was contained within the key topic area (central theme). The number of mind maps increased to include the data for each interview question, rather than across the six key topic areas. And, experimentally, several new mind maps were created and explored, with groups of themes taken from across several mind maps and placed into one. Overall there were twenty-five mind maps generated and manipulated.

The mind maps achieved the goal to view and work with the codes, which was helpful and productive, yet it had limitations. These were not specifically related to the mind mapping program but rather due to the restrictions of the pre-determined key topic areas, which are essentially the way in which mind maps are set up with one central idea. This did not allow for the data to speak for itself where codes could emerge without immediate classification within a broad key topic area, as had been the case. It was clear that a second phase of coding was needed (and was one in which mind maps were not used). That was the point in which I halted the rearrangement, regrouping and labelling of *in vivo* fragments and descriptive codes. At that point I concluded the process with two outcomes. First, the mind maps were finished maps of data within themselves, in which I adopted the phrase “learning maps” to describe the finished maps, as explained in the following paragraph. Second, at the suggestion of my senior supervisor, I noted the thematic ideas per quadrant of each mind map into a table for use in later phases of the analysis process.

The finished mind maps were no longer only a visual representation of the list-view of codes at the beginning of the analysis phase, they had become individualised maps of research thinking. The concept of the learning map to describe the outcome of the learning process, in my case it was the learning process of working with the mind maps, was informed by the *8 Ways of Learning* model (Yunkaporta, 2009). The model is the research outcome of Yunkaporta's (2009) thesis titled, *Aboriginal pedagogies at the cultural interface*. Yunkaporta (2009) stated, “Learning journeys can be drawn as a map with points of understanding indicated along the way rather than at the

end” (p. 5). This visual process resonated with my interactive mind mapping experience, in which the rearranged clusters showed the crystallisation of themes and indications as shown in Figures 8–11. Learning maps provided the means for me to visualise the “points of understanding indicated along the way” (Yunkaporta, 2009, p. 5).

11 Closing Remarks: Using Visual Representation in the Doctoral Journey

Visual representation took two forms in my doctoral journey, through cartooning and mind mapping. Cartooning was a visual representation for the expression of research thinking. The visual expression enabled by cartooning was a way to depict and share my experiences of the doctoral journey. It gave credence to the doctoral journey as a concept and was a vehicle for reflective thinking through visual image. In my education PhD, cartooning was out of field – as well as left-of-field – which enabled a personal observation of the creative process, a key component of my doctoral investigation. As was the case in my candidature, supervisors can support and encourage the use of visual expression by their students as a means for students to hone their research thinking, explore the creative process or simply to utilise creative process in the arts as a therapeutic stress release. Visual representation through mind mapping was a further way in which visual expression and exploration was invaluable in my doctoral journey and research. The application of visual tools in doctoral work such as mind mapping certainly has a place in the way in which researchers view and work with data. In my case, the goal of mind mapping was to be able to view the data in a non-linear manner and to utilise the visualisation of the data in a dynamic way towards the development of themes in the data. Rather than using mind maps to organise my research thinking I used them to develop my research thinking within the process of analysis. The value of each of these experiences enabled a renewed, deep appreciation for the use of visual representation. These processes have significance for candidates, supervisors and researchers in any discipline to promote reflection to depict and realise learning.

12 Conclusion

The doctoral journey is filled with unpredictable elements. Cartooning and mind-mapping were unplanned yet invaluable experiences of visual representation in my study which was not at all about visual representation (or so I thought). My doctoral journey has explored the creative process, through visual means, for reflecting, thinking and giving voice to research experiences and data analysis. For a music performer and educator researching the creative process, the use of visual representation was a thread for communication and exploration. The use of visual expression continued in later stages of the study to become part of the analysis process through mind mapping. Through an interactive mind-mapping program, raw data fragments were mixed, grouped, regrouped, meshed, overlaid, in a visual process of learning, evolving into intricate learning maps showing emergent themes. Underlying the visual expression in the doctoral journey was communication, at times dangerous (depending on the audience) but always descriptive. Through visual means, direct messages were conveyed (through drawing) but also enabled the crystallisation of themes (learning maps). In conclusion, for a doctoral candidate, visual representation can lead to expression and communication of experiences on a journey that had no predictable path, or map, and which is ultimately in itself, a creative process.

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