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The Value of Two Modes of Graphic Elicitation Interviews to Explore Factors That Impact on Student Learning in Higher Education

Abstract Since student learning and supervision are viewed as social processes, investigations into doctoral learning need to consider social learning theories and ways to illuminate student relations during this time. For such social research, interviews are the most extensively used instruments to gather data, but the data can be enriched by the use of visuals. This article reports on the value of two modes of graphic elicitation interviews to delve into factors that impacted on the progress of research master's and doctoral students at one university. The studies were exploratory and the approach was within the framework of participatory visual research methodologies. The first setting involved 11 participants who were particularly successful in the completion of their studies. In accordance with the socio-cultural theory, the students completed a diagram in the form of a relational map, after having completed a table in which they brainstormed the people, artifacts, and processes that contributed most to their success. In the second setting, 10 less diligent students were instructed to complete drawings (timelines) to illustrate their research journeys. These were guided by three questions to ensure that the students focused on the topic. In both instances, the graphics (diagram/drawing) were used to elicit interviews, which were tape recorded. In the second setting, the situated learning theory, the social capital theory, and the self-regulated learning theory were used to analyze the data and identify themes in the narratives. The paper highlights the advantages and limitations of both methods. Both methods facilitated unexpected outcomes. The biggest advantage of drawings was that they were unconstrained by the researcher's previous knowledge about the topic. Moreover, their greater flexibility allowed participants more freedom of expression and a stronger voice. However, the selection of visuals (such as diagrams, tables, or drawings) should be based on the specific aims of the research.

Keywords Drawings; Diagrams; Graphic Elicitation Interviews; Doctoral Student Learning; Relational Maps; Timelines

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This paper explores the value of two modes of graphic elicitation interviews to understand factors that impact on the learning progress of students in higher education where learning is seen as "rooted in experiences of the concrete reality we encounter" (Emilsson and Johnsson 2007:165). The investigation was sparked by concern over the slow throughput and high dropout rate of research master's and doctoral students at the University of South Africa (Unisa). Only about one third of the students complete their research within the expected period; about one third drop out within one year, and another third extend their studies beyond the required time frame.

Doctoral learning is viewed as a social process that involves both personal and social learning (Hopwood 2010). Accordingly, supervision during doctoral studies is seen as a professional activity during which professional knowledge develops, which is based on relations (Shohet and Wilmot 1991). Since supervision and student learning are viewed as social processes, investigations into doctoral learning need to consider social learning theories and ways to illuminate student relations during this time. For such social research, interviews are the most extensively used instruments to gather data, but the data can be enriched by the use of visuals.

Visual research methodologies "are distinctive, are valuable, and should be considered by the social researcher whatever their project," according to Banks (2007:4). Visuals such as photographs, drawings, graphics, and, to a lesser extent, tables and diagrams, have been widely used to collect data in many different fields (Banks 2001). In anthropology and the natural sciences, investigators tend to use researcher *prepared* photographs, graphs, and/or tables as probes during interviews (Notermans and Kommers 2012; Kuehne 2013). However, in the social sciences, investigators are inclined to use visuals that are created *during* the investigation by the participants (Banks 2007).

With reference to the education community, academics had not yet embraced visuals as a legitimate form of data collection, referred to as their "blind spot" in 2001 (Fischman 2001). However, since then visuals have gained credence as a valuable research tool with teachers and students of all ages. One study used co-authored drawings with students as young as four to seven years old to gain insight into their perspectives on guided reading (Hanke 2013). Older students, such as adolescents, can play an active role by creating visuals to express their views. One example is a study that required adolescents to take photographs to explain how they experienced outdoor education programs (Smith, Gidlow, and Steel 2015).

In higher education, visual methods have been employed with great success to deliver rich and nuanced data that enhanced insight into different issues. One investigation with novice students used visual narratives to explore the outcomes of a first-year "student success" seminar (Everett 2015). The approach provided insight into factors that affected their sense of belonging and psychological well-being. Another study used the graphic novel (the design of "comic books") as a data collection method to explore pre-service teachers'

identity development (Galman 2009). In order to present their stories with concrete and abstract images, participants were required to reflect deeply to reveal their identities as teachers in this way. Visuals can also be effective in evaluating teaching programs. In one example, the investigators used life mapping and a metaphor elicitation technique (with picture gathering and storytelling) to evaluate an Executive MBA program. The approach illuminated the challenges that the students faced as they started the course, and what they most valued about the program (Han and Liang 2015). In recognition of the value of incorporating graphics in research, doctoral students in a qualitative research course were required to utilize visuals in their assignments to enrich interview data (Ellis et al. 2013). The students offered their participants a choice of different visuals to illustrate something significant such as timelines, color or shape coded schedules, diagrams, or drawings of symbols or of colored pictures. The students found that the participant-created visuals ensured relaxed interviews, refreshed participants' memories, encouraged storytelling, and revealed relevant whole-part structures of topics.

With regard to research on doctoral studies in particular, the use of visuals is limited. One Finnish study used 16 doctoral students who had been registered for more than seven years (Vekkaila, Pyhältö, and Lonka 2014). The students were required to visualize their research journeys, indicating what facilitated engagement or disengagement. The study found that student engagement was related to commitment, vitality, and immersion; and that disengagement was about inadequacy, skepticism, and fatigue. One South African study also utilized visuals; it explored supervisors' views of supervisory roles by means of metaphoric drawings of ideal practices (Van Laren et al. 2014). Individual participants portrayed the supervisory relationship as communal gardening, a tennis match, two weaver birds building a nest, or as a marathon, to name a few examples. The exercise was valuable for sparking participants' reflection on their own supervisory practices.

The above exposition shows that visuals could add value to investigations into factors that impacted on doctoral student learning. With that in mind, two research projects were undertaken; one was with successful students (using a diagram) and the other was with struggling students (using a drawing).

The Use of Diagrams and Drawings in Graphic Elicitation Interviews

Although authors use terminology inconsistently, diagrams and drawings are viewed as two different modes of graphic elicitation by some authors (Varga-Atkins and O'Brien 2009). Where a drawing is a quick, free-hand sketch, a diagram is defined as "a visual representation that shares the properties of written text and representational images, but cannot be reduced to either" (Blackwell 2001:1).

Diagrams are effective instruments of thought (Crilly, Blackwell, and Clarkson 2006). The use of diagrams offers researchers more control over an investigation than drawings because the structure of diagrams is more representational and it uses pre-set notations (Varga-Atkins and O'Brien 2009). In addition, diagrams have the advantage that their spatial arrangements carry meaning, which may not be the case with drawings. Drawings are therefore more suitable for case by case analysis, and diagrams for comparisons across cases. In reference to other modes of graphics, tables tend to be linear, incorporate verbal signs such as words, and are relatively simple to interpret (Varga-Atkins and O'Brien 2009). Diagrams are less structured (more fluid) than tables, but more structured than drawings, therefore diagrams are cognitively less demanding to interpret than drawings. Diagrams are particularly useful when the aim is to elicit knowledge from experts or when there are cross-cultural language difficulties (Crilly et al. 2006). Drawings are composed primarily of visual signs and symbols, are open to interpretation (fluid), and are therefore not always easy to understand.

Using drawings in research has numerous advantages, which include the fact that it is a simple method that requires only paper and pencil, it is concrete, immediate, can function as an effective ice-breaker, encourages participant reflection, facilitates projection and thus participant insight into subconscious issues, is flexible, and can be enjoyed by participants and children in particular (Mitchell et al. 2011a).

One kind of drawing is a timeline, which arranges events related to a specific issue according to time. Various researchers have pointed out the value of this method to explore life experiences since a timeline is a graphic that visually portrays life and learning experiences (Bagnoli 2009; Sheridan, Chamberlain, and Dupuis 2011). In their narrative-based investigation on weight and weight loss, Sheridan and colleagues (2011) found that the timeline their participants drew (of their weight over time) helped them to focus on the topic and thus generated data that enabled an enhanced understanding of their experiences. Explaining their timelines also strengthened the researcher-participant relationship. Data analysis of drawings can be complex. However, the drawings are not analyzed in isolation, but are considered in the context of verbal interviews so that the analysis is essentially language-based (Banks 2001; 2007; Pink 2006). On the other hand, using only the interview transcripts to the exclusion of the visual images can also be criticized since they can add depth and richness to data (Ball and Smith 1992:12).

Graphic elicitation interviews offer the following advantages over traditional interviews: they lessen tension or awkwardness that may arise between interviewers and interviewees; become a stimulus for further questioning and elaboration; offer documentation of the interview (Wall and Higgins 2006; Banks 2007); provide alternative ways of knowing and understanding interview content (Mannay 2010); stimulate reflection and recall, reveal the unanticipated (Banks 2001; 2007; Crilly et al. 2006); focus the attention of the interviewees on the theme of the interview (Varga-Atkins and O'Brien 2009); are particularly useful with distressed groups or when presenting contentious ideas (Notermans and Kommers 2012; Kuehne 2013); uncover the layering and subtlety of lived experiences and allow for a more nuanced understanding of an issue

(Mannay 2010; Sheridan et al. 2011); help to reduce potential interviewer bias (Rapley 2001); enable the researcher to obtain further insight into social phenomena than with traditional interviews; help to explore everyday occurrences in the participants' lives; and empower participants because the participants play a leading role in the research (Kesby 2000; Rose 2012). Giving participants power enhances the trustworthiness (also called the transactional validity) of the findings. Liebenberg (2009:444) points out that using participant-created visuals in graphic elicitation interviews raises the voice of participants above those of researchers, and "situates participants as authorities on their lives, better controlling research content." Using visuals in research can therefore counteract the problems presented by overfamiliar territories (Mannay 2010). One example is the field of supervision, which may be too familiar to academics to allow "objective" research.

As noted, this study evaluated the usefulness of two modes of graphic elicitation interviews, which were used to explore factors that seemed to impact on the study progress of research master's and doctoral students. The two settings are explained in the next section, followed by a discussion and a comparison of the value of the two approaches, and finally by the conclusions and recommendations of the study.

Description of the Study: The Two Settings

As mentioned, the investigation on which this article is based was initiated by concern over the slow throughput and high dropout rate of research master's and doctoral students at Unisa, a mega distance education institution with more than 400,000 students. It was carried out at the College of Education and aimed to improve insight into factors that impacted on the students' learning and development. The approach was within the framework of participatory visual research methodologies (Mitchell et al. 2011b). It was also exploratory, interpretative, and constructivist, which implies that "the data are brought into being through the process of inquiry" (Banks 2007:12). In the research, the visuals that were generated were not the only data, but also the tools that generated the actual data.

The specific research aims, the relevant theoretical framework, the task description, and a summary of the findings of the two settings are explained in the next section. Examples of diagrams and drawings are provided to illustrate how participants visualized their learning experiences.

Setting One

Specific Aim

The specific aim in the first setting was to gain insight into how successful students were socialized to learning success and the role played by people, artifacts, and processes in this regard.

Theoretical Framework

The socio-cultural theory was identified as relevant and useful to frame the research in terms of design and data analysis. According to the socio-cultural theory, pedagogy in a relational sense refers to the initiation of relationships and actions across multiple spaces (places), which provide the potential to learn (Pratt et al. 2013:46). Student learning and development occur through social experiences when the students interact with people (using language), artifacts (which include academic books and journals), situations, work contexts, or academic institutions and practices (Lantolf and Thorne 2000; Billet 2006).

Task Description

Eleven students, who had completed their degrees in the minimum time period and with great accomplishment as revealed by their examination results, participated. They were identified by means of a computer generated list or were personal referrals by their supervisors. In accordance with the socio-cultural theory, the data were collected using tables and diagrams called "relational maps" (Crilly et al. 2006; Bagnoli 2009). The task was structured in the sense that it clearly guided the participants on how to complete the assignment and which notations to use, starting with A, B, and C (Varga-Atkins and O'Brien 2009). To encourage participants to reflect and recall the people, processes, and artifacts that enabled them to be successful, they were provided with two A4 pieces of paper: one had a 10-line and 3-column table printed on it, and the other had a map with five concentric circles. Guided by the socio-cultural theory, the participants were requested to brainstorm the names of the people, artifacts, or events/practices that they believed contributed most to their success, and to list these in the first column of the table, in any order. To enhance reflection, they noted the relationship involved (which could include supervisors) in the second column, and the meaning of the relationship (such as emotional support or research guidance) in the third column. Using the coded information in the table, the participants then completed a relational map (Rose 2012) with themselves in the middle. They were required to put the most important person/artifact/practice in the circle closest to themselves in the middle, while people or practices with less significance were placed in the outer circles. In this way, the spatial arrangements indicated the strength of influence a factor had on a participant. Finally, the participants explained the relational map in interviews, which lasted at least one hour and were recorded and transcribed verbatim. Additional information was gleaned from participants in follow-up interviews after transcriptions had been analyzed. In the data analysis, the socio-cultural theory was used as a lens to identify categories. Within each of these, the analysis was bottom-up by identifying units of meaning, as well as coding and grouping them. The findings of the transcripts and the details provided by the diagrams were compared across cases to identify patterns. For example, the persons/processes/artifacts that the participants placed in the first concentric circle were identified in relation to those placed in the other circles. This enabled the researcher to determine the possible interconnectedness of factors.

Findings

The investigation in the first setting achieved its aim. The completion of a table, and using that information to complete a relational map, was effective in

stimulating reflection (Banks 2001; 2007) and helping participants identify key factors that facilitated their successful learning and development. Because its spatial arrangement carried meaning, the map was a useful tool to convey participants' beliefs about which people, artifacts, or processes were *most* important to their success, confirming the usefulness of diagrams (Crilly et al. 2006). The interview transcripts were coded using three general categories derived from the socio-cultural theory, namely, mediation, internalization, and the zone of proximal development (ZPD). Within these categories, the participants' interviews illustrated the significant role of supervisors and institutional support (which included staff, academic literature, workshops, and conferences), the students' language ability, and financial support to facilitate student learning and development. The study also revealed that students needed to be able to set their own goals and regulate their own learning to be able to internalize the insights they had gained. It illustrated that students could deliver conceptually complex research outputs through interaction in learning communities that included supervisors, other academics, and peers, which increased their ZPD. The tables and maps also served as proof of the investigation and thus contributed to the trustworthiness of the investigation.

Although the tables and maps stimulated reflection and recall, there were two instances where key role players or artifacts were at first omitted; this was picked up during data analysis and followed up in subsequent interviews. In one instance, the participant referred to a psychologist who supported her during a time of distress that was directly related to her research and slow response time by her supervisor, and in a second instance, a Chinese speaking student found it essential to first improve her command of the English language as a cultural artifact to enable her to express herself in academic writing. When probed, both participants placed the person or artifact in the circle closest to themselves in the middle, illustrating the importance of follow-up interviews. With reference to the Chinese speaking student, her linguistic abilities made it difficult to follow her and to transcribe her interviews. In this regard, the diagrams were invaluable to pinpoint the key factors that socialized her to success. This confirms that diagrams are especially useful when there are linguistic constraints (Crilly et al. 2006; Liebenberg 2009).

Figures 1 and 2 illustrate what a female participant, Mary, who had completed her master's degree with distinction within the required time frame, identified as most important in her socialization to success.

Figures 1 and 2 show that participants did not necessarily recall the factors that socialized them to success in order of importance. Completing the tables supported participants in their reflection and recall of key factors without having to think about relative importance simultaneously. When completing the relational map, they only had to focus on the relative importance of all the important people, artifacts, or processes that they had recalled. In the relational map presented as Figure 2, Mary identified her goal directed behavior (A), as well as the fact that she was particularly interested in the topic that she selected to pursue (D), as the most important reasons for her success. She thereafter perceived her interaction in the academic community with her very efficient and supportive supervisor (C) and the emotional support of family and friends (F) as significantly contributing to her achievement. Thirdly, Mary identified the key information she could access in books and articles (E) and her interaction with fellow students (B) in the academic community as crucial. The relevant child trauma workshops she could attend (G), presented and coordinated by two dynamic and inspiring female academics, was the last important facilitator of her successful learning and development.

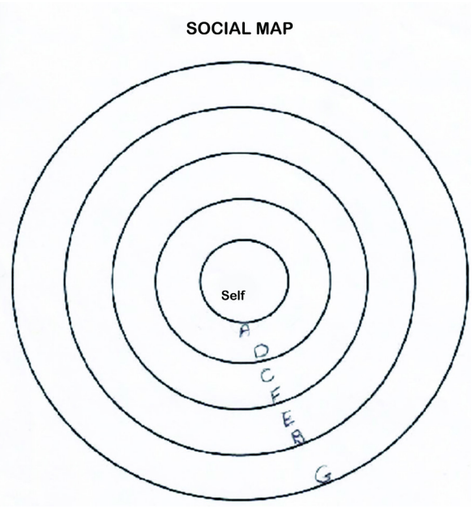
Figure 1. Table completed by Mary, a successful master's student.

Think about the people, places, practices, artefacts (objects) etc. that helped you to complete your studies successfully. List them in the table below. The order in which you list them does not matter.

Symbol	Name of person/ group	Relationship with person/group, e.g. colleague, another student, supervisor, etc.	Reason/s (very briefly – one or two words will do)
A	Future work opportunities	With self & future prospects.	Could not work as psychologist before completion of M – very high motivator
B	Fellow M Students	Peers	Very motivating w. each other & support
C	Prof. Kruger	Supervisor	Great supervision and strong support
D	My topic	With self and interests	Very passionate/interested in my topic
E	Articles & Books	Information about Art therapy	Inspiration – help to direct studies.
F	Family & Boyfriend	Close personal support	Gave me support & listened patiently to everything
G	Child Trauma Conference	Attended course.	Reminded me why I want to do what I do
H			
I			
J			

Place each person etc. by means of the symbol only (A, B, C. etc.), in the concentric circle provided. Put the person etc. that had the greatest impact on your studies, closest to you (in the centre) and the person etc. that had the least impact, furthest away.

Figure 2. Relational map completed by Mary.



In reference to A, Mary explained:

> The most significant motivator and reason for my success was the fact that I could not get employment without my master's degree. At that stage I was busy with my internship…so my work prospects at the time were that I either needed to go back to teaching, which I did not want to do, or to continue with my studies, otherwise I would not be able to work as a psychologist. It was a *huge* motivator. It pressured me to work hard and as quickly as possible…and I did work rather fast!

With regard to the topic of her research (D), which influenced her goal directed behavior, Mary recalled:

> My topic was very close to my heart and it was also very interesting. I felt that it was something

> new…I did my research on the use of digital media in art therapy. I could not find much information about it and I could not find any literature on digital art therapy that was done in South Africa. So, I was very enthusiastic about it. I really enjoyed it [the research]. So I think it had a huge impact on my achievement.

With reference to C, her supervisor, she stated:

> I had a great relationship with my supervisor. If I listen to other students, I realize how wonderful she was. She motivates one…she pushes one…she is a student's biggest fan actually…and she picked up the smallest detail and stimulated my thinking about things I did not think of. She would write "great" or note that something was interesting…or that she also learnt something new…or that one was on the right track…her criticism, she was always constructive.

When the diagrams were compared across cases, in particular with reference to what the participants viewed as most important for their success (placed in the first concentric circle), the researcher found something unexpected: the participants very often selected people, artifacts, or processes *outside* the academic community of practice (Lave and Wenger 1991). These personal factors included the availability of quality time; clear personal goals; or being passionate about the selected research topic. Important personal relationships included the emotional support and encouragement of family, friends, or professionals such as a psychologist, as well as a personal relationship with a higher being (God), that gave them the strength to continue during times that they struggled. Only in a few cases were factors in the academic community of practice mentioned as most important for participants' success: these included excellent supervision; participation at academic conferences; and interaction with valuable academic literature. A noteworthy finding was that when the students' relationships with their supervisors were strained, the emotional support and encouragement from significant others became more important. Thus, the diagrams (relational maps) were useful to reveal whole-part structures of the topic, as also reported by a few other investigators (Ellis et al. 2013).

Setting Two

Specific Aim

The particular aim in the second setting was to gain insight into the learning experiences of students who showed unsatisfactory progress. This replicated an earlier study undertaken in Finland (Vekkaila et al. 2014), which explored the factors that inhibited the students' learning, and what made them resume their studies after periods of inactivity.

Theoretical Framework

The social learning theories that were identified as most useful for data analysis and interpretation were the situated learning theory, the social capital theory, and the self-regulated learning theory, based on Bandura's (1986) social cognitive theory of learning. The situated learning theory, for example, learning in communities of practice, states that learning is influenced by the culture, context, and activities in which it takes place, and that social activity is a key ingredient of learning (Lave and Wenger 1991). Through activities in the academic community, praxis is renewed and insights are generated by participating students. The social capital theories illuminate how the social networks in an academic community are a source of information about norms or expectations and thus function as a source of social capital (Social Capital and Education n.d.). Other valuable resources for research students are peers (Leshem 2007; Klenowski et al. 2011; Pilbeam, Lloyd-Jones, and Denyer 2013) and supervisors (Schulze 2011). The self-regulated learning theory explains why and how students learn independently, and what they need to know about themselves and their academic learning tasks (Zimmermann 2001). Self-regulation refers to the degree to which the students are actively involved in their own learning on a meta-cognitive, motivational, and behavioral level, and involves the setting of goals, organizing their learning effectively, and consistently reflecting on and monitoring their learning progress (Cleary and Zimmermann 2004).

Task Description

In the second setting, ten less diligent students participated in the investigation. The students were identified by their supervisors for poor progress or were selected from a computer generated list of students who had been in the system for longer than the required completion time. In this setting, the task was less structured than in the first context in the sense that free-drawing of timelines was deemed as most appropriate to gain the information that was needed. The interviewees were provided with a blank A4 piece of paper and a pencil and requested to take their time to visualize and draw timelines to depict their journeys as postgraduate students—from when they first registered up to the time of the interview. They were required to focus on the motivating or challenging events that occurred during this time so that they could elaborate on when and where significant events occurred, why these took place, and what happened thereafter (Vekkaila et al. 2014). The interviews were about one hour long, were tape-recorded, and were transcribed verbatim. The interviews were analyzed holistically and case by case to identify themes across the collections (Mitchell et al. 2011b). Follow-up interviews were conducted after analysis to gain further clarity in some cases.

Findings

The study achieved its aims. When the participants actively reconstructed their research journeys by means of a drawing, their narratives enabled them to make meaning of the stories they had lived as postgraduate students (Clandinin and Connely 2000), and this enabled the researcher to gain insight into their reality. When comparing the narratives of the ten participants holistically, there were three main themes in reference to student disengagement: a lack of self-regulated learning, feelings of isolation from the academic community, and situational factors at work or at home. There were also three main themes with regard to why the participants remained in the system and continued with their studies after bouts of inactivity: research problems that were personally meaningful, some ability to regulate their own learning, and a bit of involvement in the academic community of practice (Lave and Wenger 1991).

An advantage of the drawings was that its flexibility enabled distressed participants greater freedom and autonomy to freely open up and "voice" their experiences and feelings, as also found by Aldridge (2014) when she used graphic elicitation interviews with vulnerable participants. It were the female participants in particular who expressed their emotional distress, perhaps encouraged by being of the same gender as the researcher. Such privileged knowledge because of a shared gender has been alluded to by other authors (Mannay 2010). Some of the female participants recounted how ill-health, failed marriages, poor relationships with supervisors and colleagues, as well as excessive work commitments impacted on their study progress, confirming the value of using drawings with distressed groups (Aldridge 2014). The approach seemed to have therapeutic value, which was an unanticipated outcome of the study. In one instance, the "bonding" that took place during the interview extended beyond the interview sessions so that the participant continued to request meetings with the researcher to discuss some of the issues that were raised.

The flexibility of the drawings allowed the participants to present their timelines in whichever way suited them. Some participants, for example Dee, drew figures that simulated mind maps or flowcharts (Figure 3); Anthony presented his timeline in table form (Figure 4), while a third group, for example Anna, preferred linear drawings (Figure 5).

Figure 3 gives an indication of Dee's academic journey during the five years preceding the interview. During this time, ill-health, a high workload, and divorce led her to relinquish her studies for certain periods. In respect of the impact of her divorce on her studies, she mentioned:

> The repercussions of the divorce were severe. I had to get a restraining order against my ex-husband… He would not allow me to take anything from the house, so I literally left with the children and our clothes…and [that meant] starting off from scratch… not having anything in the house, not food, not anything. My work colleagues became my pillar of support and that was something he resented. So with all of that going on, my dissertation just was totally side-lined…Here I was, researching a topic about loss…and I was experiencing that very same loss.

In his table, Anthony indicated his workload and ill-health as factors that contributed to the postponement of his studies. He recalled:

> In 2012, I didn't make too much progress. I had to do my academic workload, as well as the

Figure 3. Dee's timeline.

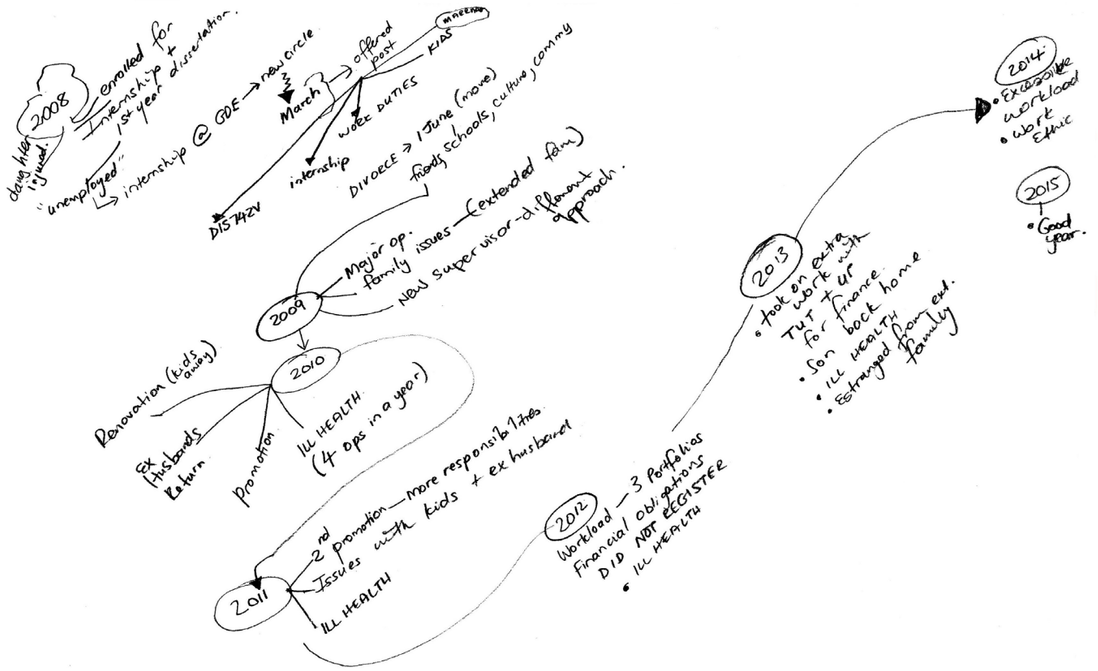
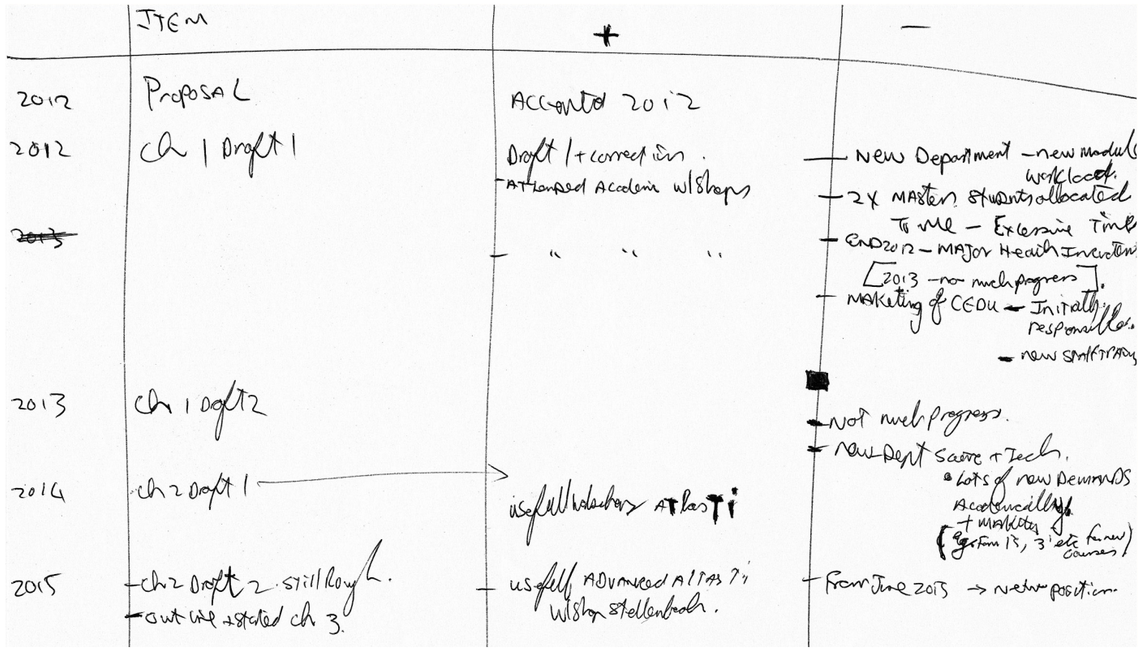


Figure 4. Anthony's timeline.



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> marketing for the Dean. I also was allocated two master's students which I found quite stressful and [it] took a lot of my time because it was extra reading and advice and asking. At the end of 2012 I had a major health incident, which unfortunately really gave me a bit of a psychological setback…and then other staff was appointed and I was also responsible for training them…I had to teach myself, find out and really learn…it was a lot of excessive work.

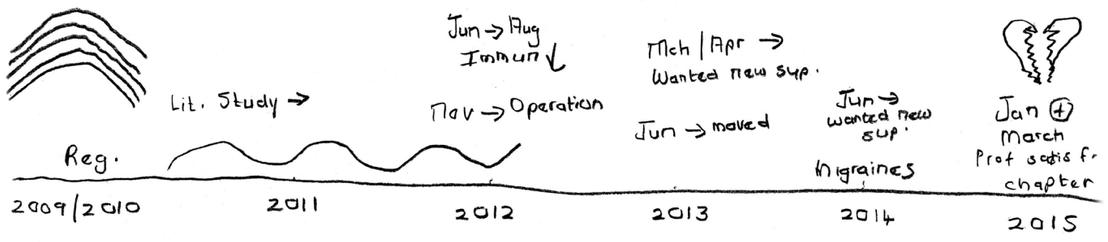
Figure 5 illustrates how Anna used visual metaphors to express her feelings, thus enriching the data. The rainbow at the start of Anna's studies illustrates the elation and expectation she felt. She recalled: "I registered for my studies in 2009…2010. The day that I registered, I felt as if I were in a rainbow. The topic was very close to my heart…a passion really…and I could not wait for the adventure to start." Anna's timeline from 2010 to 2012 shows a wavy line to illustrate the emotional turmoil she experienced as she struggled to find her feet during the first two years of her studies. She narrated:

> From the start the road was vague. I did not know how it [the empirical investigation] was going to work and wanted my supervisor to give me greater clarity. However, she told me to read more and study the literature…which I did during the first two years. However, I was not sure exactly *which* literature to study…not a lot has been written on my topic. I would have wanted more guidance.

Anna's timeline ends with a drawing of a broken heart to illustrate the complete breakdown of the relationship between her and her supervisor and the distress this caused her. This illustrates the usefulness of visual metaphors and of drawings with distressed groups (Aldridge 2014). She stated:

> She has no respect for my research. She talks with contempt of it…very unprofessional. I think she may be bipolar because I never know what to expect, and if I may approach her or not. At times she is approachable and supportive, and at other times she is like a total stranger. She referred to my studies as "the same old story"…I was shocked!…I realized I could not stay with her as supervisor since I became physically ill. I have started to develop terrible migraines. I am always uncertain…I don't progress…I feel that I don't get any support. I wanted a new supervisor, but was told that this would not be possible.

Figure 5. Anna's timeline.



Although the timelines shown in Figures 3, 4, and 5 differed in the amount of detail included, there was no correlation with the depth and amount of information provided during subsequent interviews. For example, the rank order from most to least detail provided in the figures is Figures 3, 4, and then 5. However, the rank order from most to least information provided during the first round of interviews was related to Figures 4 (6 622 words), 5 (6 669 words), and lastly 3 (4 576 words).

Discussion: The Usefulness of the Two Modes of Graphic Elicitation Interviews

There is no standard procedure when analyzing less-conventional, creative research data, according to Poindexter (2002). Accordingly, the analysis was executed differently in the two contexts (across cases with the diagrams, and holistically and case by case with the drawings, to keep each "story" intact). However, in both settings, the approach achieved the aims of the study. The graphics prevented awkwardness during the interviews, stimulated reflection and recall even though follow-up interviews were sometimes required, and enhanced the trustworthiness of the investigation. Thus, the participants could identify the most salient factors that impacted on their studies, as was also found in other projects that used visuals (Mannay 2010). In both contexts, the power was with the participants, in particular when drawings with their greater flexibility were used. Giving authority to participants allowed for unanticipated outcomes in both contexts (the significance of the personal lives of students for their success, and the apparent therapeutic value of drawings and talking about them). However, advantages of diagrams included the fact that their spatial arrangements carried meaning, which enriched the data and revealed whole-part structures of the topic. They also seemed particularly useful in the case of linguistic constraints because the symbols could be used as modes of expression. Using first a table and thereafter the map was successful since participants could focus on one issue at a time. The advantages of drawings include the facts that they give participants greater freedom, voice and power, and can enrich data if visual metaphors are used. In this research, the drawings also worked well with the participants who were distressed. It encouraged bonding between the researcher and these individuals. This could have been influenced by the fact that the researcher was of the same gender as those participants who seemed to have gained therapeutic value from the interviews.

From the above, the following hypotheses emerged which require further investigation by means of comparison groups: Firstly, drawings (e.g., timelines), as used in this research, are useful with distressed groups because it allows ample opportunities to express emotion. Secondly, because of the aforementioned, the gender of the researcher

versus that of the participant could influence what is revealed during interviews. Thirdly, drawings have a greater potential than diagrams to elicit visual metaphors that enrich the data because drawings allow for unlimited artistic freedom. Fourthly, drawings are less useful than diagrams with participants who have linguistic problems, since the participants need to be able to articulate their stories in relation to their drawings.

The findings and hypotheses do not suggest that figures are a better choice than diagrams to collect data. The findings demonstrate that the choice of graphic needs to be informed by the particular aims of the study. When an investigator is clear about the overarching factors involved in a study but requires more detail about secondary factors and their relative strength, diagrams are the best choice. However, if a study focuses on stories, figures are more effective to elicit the information.

Conclusion

This paper aimed to explore the value of two modes of graphic elicitation interviews to gain insight into factors that impacted on the learning progress of research master's and doctoral students at Unisa. Both modes of graphics (a diagram and a drawing) enabled the researcher to gain insight into what the participants themselves interpreted as the realities associated with their success or their lack thereof. The visuals functioned as a neutral third party that prevented discomfort, and facilitated reflection and recall. The graphics and the interview data also presented the investigator with unanticipated outcomes and thus enhanced insight into student learning in higher education. Finally, they were visible proof of findings that enhanced the trustworthiness of the research. Both modes had advantages and limitations, as has been pointed out. The biggest advantage of drawings was that they were unconstrained by the researcher's previous knowledge about the topic, even though some pointers were required to ensure that the participants remained on track. Their greater flexibility allowed participants more freedom of expression and therefore more power and a stronger voice. However, more research with comparison group research designs is needed in order to compare diagrams and graphics with regard to their usefulness (or not) with distressed groups and with participants with linguistic problems, their ability to elicit (or not elicit) visual metaphors, and the impact (or non-impact) of the gender of the researcher.

In addition to the above, it is recommended that visuals be used more often in higher education research considering its potential to enhance insight into educational issues that include supervisory practices. The selection of visuals (such as diagrams, tables, or drawings) should be based on the specific aims of the research. A choice of color and activity could be included in the consideration of personal preferences of participants, and they could be encouraged to use visual metaphors or to add titles to their stories to express their feelings or views. This could add more nuances and layers to the findings to enhance insight into learning and development in higher education.

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