Tensions Facilitating Codesign in Graphic Design: *Working with Asthma Educators in Australia*

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This paper presents a real-world case study, aiming to trial codesign in graphic design. Four designers and twelve asthma educators codesigned an approach to organizing asthma information in a series of codesign workshops. The findings, drawn from four toolkits trialed in the workshops, show underlying client assumptions were challenged. Grouping asthma sufferers, according to their emotional responses to asthma was a new approach for the client, who previously organized asthma information by age, gender and asthma triggers. This outcome is noteworthy as it challenges the designer's role as intuitive problem solver, highlighting the value of codesign processes to make visible appropriate project outcomes rather than working in a vacuum, without end-user insights. Six reflections are presented for designers to keep in mind when engaging with codesign processes: keep toolkits unpolished; play games to dissolve tensions; share ownership of the final design concept; design for emotional demographic categories; focus on relevant design concepts; and be flexible with time and cost. The conclusion challenges the expert, intuitive role of graphic designers, arguing taking the time to codesign allows discovery of important project insights, outweighing the tensions graphic designers face when sharing creativity with non-designers.

Keywords – Asthma, Codesign, Design for Emotion, Graphic Design, Participatory Design, Toolkits.

Relevance to Design Practice – This case study highlights the value of codesign toolkits to redefine client briefs. Grouping asthma sufferers, by emotional responses to asthma rather than demographic categories was a significant finding for the client. Six reflections are discussed for design practice to keep in mind when undertaking codesign.

Introduction

Codesign has a broad literature in fields such as workplace design, human-computer interaction, product design and architecture but few case studies document its application in graphic design (Robertson & Simonsen, 2012). Codesign's central premise is that people who will use a design have a right be involved in its creation (Lee et al, 2018; Lundmark, 2017; Reich et al, 1996; Sanders & Stappers, 2008; Wilkinson & De Angeli, 2014). Codesign researchers argue all people have the right to contribute creative ideas to the design of things that affect them (Hussain et al., 2012). Cross (2006) argues that all people can be taught designerly ways. However graphic designers have historically overlooked the value of end-user creativity, instead relying on their own intuitive and creative skills.

Codesign means sharing creativity with end-users where the new creative task for graphic designers is the development of design tools, mediating between end-users' contextual knowledge and their own visual expertise. According to Sanders (2001), to be facilitators, designers first need to develop an open attitude towards everyday people's ability to contribute creatively. Sanders (2001) proposes everyday people want to be creators as well as consumers, urging future designers to focus on creating mediation tools rather than proposing resolved design outcomes. In facilitating a do-it-yourself culture, Sanders (2006), urges graphic designers to extend their creativity to develop codesign methods and facilitation skills, allowing people to design for themselves, or contribute their ideas engaging with graphic designers. Writers indicate further research into end-user engagement in graphic design is required, but the idea of end-users participating in the graphic design process has not gained traction (Cornish et al., 2015; Drucker & McVarish, 2009; Forlizzi & Lebbon, 2002; Frascara, 1997; Nini, 2005). Possible reasons for the field of graphic design not taking on board participatory and inclusive methods are the perceptions that it costs too much, takes too long, they work for the client rather than their audiences (Taffe, 2015).

The codesign literature connects the role of the designer to a facilitator, where designers use their knowledge to help end-users fulfil their needs, empowering them in the design process (Del Gaudio et al., 2016; Kensing, & Munk-Madsen, 1993; Luck, 2003; Pirinen, 2016; Spinuzzi, 2005; Sui, 2003). Many terms have been used to describe the role of facilitation. Kensing and Munk-Madsen (1993) talk of *bridge-building* between the worlds of end-users and designers to create something new from the combination of designers' technological knowledge and end-users' local tacit knowledge. For Sui (2003), the designer no longer aims to deliver fixed solutions, but rather facilitates

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conversations with end-users. Sui argues the role of facilitator allows end-users to participate in decision making with greater flexibility. Luck (2003), depicts codesign as a social process that transfers end-user knowledge to the designer, who then integrates this knowledge to the design process for the end-users' benefit. According to Spinuzzi (2005), the design process becomes a forum for negotiating different design options. Friedman (2003) depicts the designer as a synthesist who solves problems by understanding the skills required to address them. In graphic design Frascara (2004), describes the future role of the designer as a guide, advisor or coordinator, who supports end-users and decision-makers to achieve creativity. Despite broad agreement in the codesign literature that the designer's role is poised to become a facilitator, case studies are missing trialing graphic designers in facilitation roles.

The codesign literature describes various benefits and challenges in the move to a facilitation role. Advocates of designers as facilitators claim it leads to building respect between stakeholders. Authors argue that successful communication between designers and end-users has the potential to achieve holistic designs (Ehn, 1993; Kensing & Munk-Madsen, 1993). Authors recognize the difficulties of reporting codesign studies as end-user tacit knowledge, being unique to individuals and a product of their whole experience, is difficult to generalize (Rust, 2004; Spinuzzi, 2005).

Authors have engaged end-users to design and evaluate in home asthma management programs (Erwin et al., 2016), and authors have studied graphic designers' relationships with clients and audiences (Martin, 2012) and more recently the graphic design visual ideation process (Laing & Masoodian, 2016), however studies examining the challenges for graphic designers facilitating codesign with end-users is rare, leaving it difficult for graphic designers to know how to progress, establishing the need for the present case study.

Case Study Method

Asthma Information Project

The case study described in this paper was part of a larger project for the Asthma Foundation, conducted in Melbourne, Australia. One of the aims of the Asthma Foundation's initial client brief was to reduce the number of asthma information brochures. The Asthma Foundation previously developed brochures for various demographic audiences with a design consultancy,

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using design-led processes. The front cover of these brochures photographically represented various demographic audiences, such as elderly men, women over fifty, teenagers or children, however the text inside duplicated information with a different focus for each demographic. It was decided that the Asthma Foundation was not ready to involve these audiences as there was work to be done to assess how the asthma educators, as end-users of the current profusion of information resources, would like to deal with all their current asthma information before consulting particular end-user groups. We were tasked with codesigning an approach to organizing asthma information with asthma educators.

Participants

The Asthma Foundation decided to invite their asthma educators to join this codesign case study. Participation was voluntary. Twelve Asthma Foundation educators from the group responsible for public education participated in the codesign research, ranging in age from 25 to 55. This group was a main end-user of the Asthma Foundation's information on asthma risk and management. They had years of experience talking with thousands of people about asthma information and services. Some worked full time on a public asthma telephone hotline service, some were responsible for asthma education outreach in primary and secondary schools, others advised workplaces on best practice asthma awareness and management and others worked in the Asthma Foundation retail shop selling products and promoting information.

The designer participants were four Master of Design (Graphic Design) students with industry experience. A university graphic design lecturer art directed the codesign process and design outcomes. The design director of the graphic design studio who worked on previous Asthma Foundation designs observed the codesign activities, providing an industry perspective on codesign's practical aspects. This offered an important informal review checking process with an external designer not invested in the research outcomes. The participants will henceforth be called asthma educators and designers.

Site Visits

The designers undertook site visits to understand the information delivery context and to establish trust with the asthma educators. Site visits revealed the Asthma Foundation had a mass of information materials, print and digital, developed over an extended period with poor relations between individual pieces and sets of information (Figure 1). It became clear in the site visits that it was confusing to know where to store and find the multitude of asthma brochures (Figure 2). The Asthma Foundation decided they did not want to codesign tailor-made information with each asthma sufferer demographic before they had codesigned an approach to organizing their asthma information with their asthma educators. The first goal was to assess the Asthma Foundation's entire range of information. This depended on understanding how the asthma educators themselves used the current information, providing a robust context to explore codesign processes.

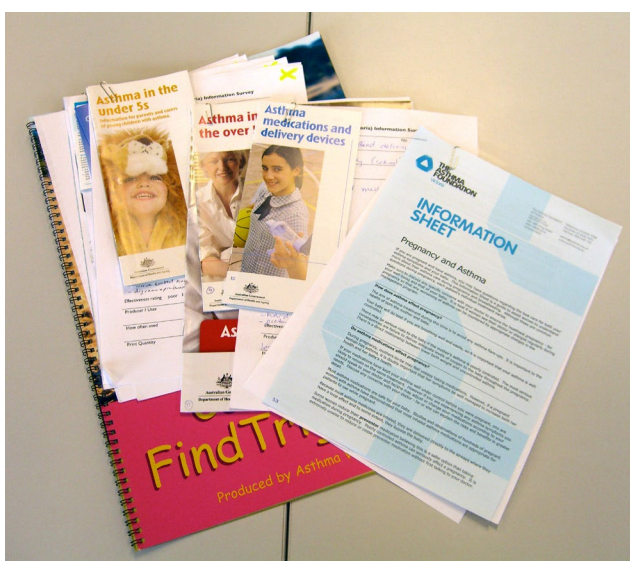**Figure 1. Storeroom of asthma information.**

Figure 2. Asthma brochures ready for sorting and categorizing.

Co-Design Workshops

In this case study a series of codesign workshops were conducted, each two-hours long held over a three-month period, following an iterative process of exploring ideas, co-designing promising concepts and reviewing ideas. This paper mainly reports on four toolkits trialled in one of the workshops, aiming to refine and evaluate concepts codesigned in our previous codesign workshops. The benefits of codesign workshops are to allow people the time and space to listen to each other's ideas and dreams (Sanders, 2000; Sanders & Stappers, 2014). A further development to the idea of workshops is the Design:Lab, using the metaphor of a laboratory instead of workshop (Binder & Brandt, 2008). The workshops took place in the training room of the Asthma Foundation's offices. The sequence of workshops allowed for reflection and completion of design work in the intervening periods. The case was non-commercial in nature, allowing a long engagement. The Asthma Foundation was open to investigating codesign, being willing to invest their asthma educators time in exploring new approaches to information organization and delivery.

The Four Toolkits

This paper draws on experiences with four codesign toolkits called 1) Asthmate Folder 2) Bubble Day Out 3) Dear Designer Diary, and 4) Asthma Stories. All participants worked on the Asthma Stories toolkit, for 30 minutes. Then the participants were divided into three teams each with at least one designer and several asthma educators (see Table 1). The Asthmate Folder, Bubble Day Out and Dear Designer Diary toolkit activities took place simultaneously for 60 minutes. Then all participants grouped together at the end and one asthma educator was invited to share to the group the ideas the group had worked on during the toolkit activities. Table 1 outlines the aims and the materials used by participants in each of the toolkits.

Analysis

For the duration of the case study, two note takers recorded general observations and the author of this paper acted as facilitator of all the workshops, documenting and photographing the activities and design outcomes. All participants answered a reflection survey at

Table 1. The Four Codesign Toolkits.

Toolkit	Aim	Participants	Materials
Asthmate Folder	• Categorize all asthma information • Identify all asthma brochures	2 asthma educators, 1 designer	• Ring Binder Folder with preprinted asthma information • Mix and match symbol/word game
Bubble Day Out	Codesign an asthma awareness day and fundraising opportunities	3 asthma educators, 1 designer	• Collage images cut into circles • Calendar dates, branding names • Blue balloons, pens, sticky notes
Dear Designer Diary	Codesign a collection of asthma scenarios summarized in the form of a brief for future designers	3 asthma educators, 1 designer	Booklet with blank timelines, photos of people, speech bubbles, text prompts, sticky notes
Asthma Stories	Understand asthma trigger patterns	1 asthma educators, 4 designers	Recording asthma triggers using colored paper and pens aiming to blur visual /verbal techniques

the end of the workshops providing their personal insights about the codesign process. The following case study data was coded for themes:

- existing asthma brochures and marketing material;
- site visit conversations and photographs;
- observational notes by the facilitator of the workshops;
- design work produced before, during and after the workshops;
- participant reflection surveys.

For analysis, all the data sources were organized chronologically under activity headings in a case report, color coding commonly arising themes. Case study enables knowledge to emerge, as the study progresses and as the researcher becomes more familiar with the environment, where propositions are derived from the data as it is collected over the study life cycle (Lincoln & Guba, 1985). The relationships between themes were systematically considered in the quest for substantive findings. The concrete things the participants discussed was important in the discovery of the six reflections presented in this paper.

Findings

The findings from participant engagement with the four toolkits is described below. Based on the initial site visits, interviews, and two previous codesign goal setting workshops, four toolkits were developed. The concept behind each of the four toolkits was codesigned with the asthma educators in the previous workshops. In between the previous workshop and the final workshop, the designers refined the proposed ideas into four toolkits that were used in the final workshop to further codesign the most promising ideas all participants had previously agreed upon.

Asthmate Folder: *Rethinking Designer Intuition*

The final workshop began by reviewing the project goals, which was agreed as how to best organize and categorize the mass of asthma information. In our previous workshop participants jointly decided an asthma information folder called an Asthmate Folder

was one of the favored creative concepts out of a suite of ideas. The asthma educators decided the Asthmate Folder concept was an ideal solution for them in their workplace to house printed matter on asthma, organizing it into color-coded categories. The designer was tasked to further develop the Folder into a toolkit ready to refine further in the next workshop. The idea with the Asthmate Folder toolkit was to firstly confirm the agreed overall Asthmate concept, then play a mix and match symbol/word card game. This game involved matching words to symbols displayed on pre-printed cards to check whether specific asthma trigger images were understandable by the asthma educators. Figure 3 shows the components of the Asthmate Folder toolkit. The designer intuitively developed the Folder concept in between workshops, yet was faced with challenges when trialing the toolkit.

When sharing the design development of the previously agreed Asthmate Folder concept in the previous workshop, the designer immediately met negative feedback, which was unexpected. One asthma educator commented they already had a folder of information. Another stated he would not use any planner or folder, seeing the idea as, *an old-fashioned approach*. These two asthma educators dismissed the Asthmate Folder, claiming the creative response was unexciting, and did not have merit. The group was tense, as the asthma educators showed no interest, their attitude negative and antagonistic. The designer who had developed the Asthmate Folder idea was confused as the previously agreed Asthmate Folder concept was now being rejected. In the reflection survey this designer notes that in the spirit of codesign, *"I had worked to respect the asthma educators' opinion and was disappointed that this respect was not returned."* She worked hard in between workshops to fine-tune the asthma educators' Folder idea yet was met with them changing their mind about their own idea.

There was a clash of interests between the participants in this activity where the designer wanted to discuss the merit of the Asthmate Folder, however, the asthma educators, after quickly dismissing the folder idea, wanted to move on to address teenage resistance to using asthma puffers. One asthma educator said, *"we*

Figure 3. Asthmate Folder toolkit and symbol matching game.

need to design something cool for teenagers." Another suggested the use of marketing on mobile phone covers as an idea to reach teenagers. A novel idea surfaced here to brand asthma puffers with football sporting imagery to make puffers less embarrassing for teenagers to carry.

The designer commented that she did her best to synthesize the ideas in the previous workshops and assumed she designed a toolkit that represented her groups ideas, however she realized, *"in the end the codesign workshops are the real test, since you do not know how the participants are going to respond to your ideas."* She admitted she started with preconceived assumptions stating, *"these workshops are in my opinion a way of testing our assumptions especially the creation of these codesign toolkits."* The designer of the Asthmate Folder began to appreciate how difficult is it to establish firm goals and agreed directions when codesigning with end-users. Things change between workshops for reasons not always apparent to young designers.

In the Asthmate Folder mix and match card game, the group readily came to a consensus about which symbols matched which words, such as an image of a cigarette and the word smoking. Interestingly, before the mix and match card/symbol game, the asthma educators reacted negatively to the Asthmate Folder toolkit. During the card game, they stood up and became physically active in the game indicating a high level of engagement (Figure 4). The asthma educators found the game enjoyable, as there was laughter while playing the game. However, once the game stopped, they reverted to being critical of the designers' idea of the Asthmate Folder. They appeared to suspend their displeasure at the Asthmate Folder concept while playing the game. This indicated a good range of images to trigger inspiration had been chosen for the Folder toolkit.

It was disappointing for us to read in the reflection survey this designer had missed the point of codesign even after we had stressed to the young graphic designers the need to ask actual end-users about their wishes and preferences in the spirit of codesign. The designer said, *"It makes sense to get the end-users' perspective on an outcome, but at the end of the day, it is up to us designers to give shape to any idea. That is our area of expertise."* This young designer went on to dismiss the asthma educator's expertise by saying, *"In my experience, I think the client is the 'God' in the design process. The client knows their organization better than anyone else."* The client in our case study was the CEO of the Asthma Foundation, who was purposely not present at the workshops. This shows an entrenched view of expert designer, suggesting it will take time for graphic designers' attitudes to shift. Codesigning *with* end-users will need to be encouraged in graphic design education and practice before it becomes a natural practice.

Bubble Day Out: *Who Owns the Idea?*

At the end of our previous codesign workshop, a concept called *Bubble Day Out* was agreed to be a promising concept that the asthma educators wanted to proceed with. The idea was to further codesign an annual asthma awareness and fundraising event for the Asthma Foundation in the next codesign workshop. The designers made a toolkit based on all the asthma educators' needs and preferences that were raised in the previous workshop. The idea was that all participants would codesign further refinements to the asthma awareness and annual fundraising event, where each page of the Bubble Day Out toolkit would act as a prompt to refine the concept (Figure 5).

We found tensions arose when evaluating the final details of the Bubble Day Out concept using this codesign toolkit. The designer did not expect power struggles to arise working with the Bubble Day Out toolkit. Initially the asthma educators were supportive of the Bubble Day Out concept. All participants freely engaged with the concept discussing with enthusiasm the image options the designer provided in the toolkit. The asthma educators chose a photo of a person in a bubble to represent a person with asthma (Figure 6). One asthma educator claimed that the sentiment of someone trapped in a bubble was representative of the feeling of a lack of air that an asthma sufferer feels. This confirmed for the designer an appropriate choice of images was

Figure 4. Asthmate Folder toolkit: Image options and playing the symbol matching game.

provided. All participants discussed the use of performers and music to attract the general public to attend the day. There was constructive discussion to decide the time of the year and day that this event would take place and choices of promotional items such as balloons and badges with positive messages for teenagers were suggested. The asthma educators commented they were pleased with the Bubble Day Out concept as a way of delivering their asthma awareness message to the general public.

While the idea of a Bubble Day Out concept was confirmed as a good idea, the process of codesigning the final details while engaging with this toolkit created tensions between participants as to who owned the idea. The designer wanted to introduce the idea as hers, reverting to the position of designer as expert. However, the asthma educator took over the activity and the recording process leaving the designer as an observer. Initially, the designer reported disappointment at her lack of involvement revealing the tension this caused between her and the asthma educators. On the other hand, the codesign toolkit activity could be called a success as it was understood by all participants, completed and was engaging for the asthma educators.

The asthma educators wrote in the reflection survey some surprising insights into their perspectives on the role of designers. One asthma educator said, *"it's amusing to have power over designers, telling them what to do."* Another reflected when briefing their current designers, *"I directly tell them what I want and how I want it to look."* The designer reflected, *"First of all, designers should be open and efficient in extracting everything from the client before getting on with designing."* This demonstrates that even after jointly exploring the benefits of the codesign process, the designers remained attached to the view that end-users are informants for designers, rather than collaborators and the asthma educators seemed to enjoy their raised status as experts in our codesign workshops. The codesign literature acknowledges that being inclusive of end-user creativity can cause tensions and power struggles between designers and end-users (Steen, 2012). Our case study confirms this finding. Even though, we briefed the group with the ideal of sharing mutual expertise and stressed joint ownership of the codesign outcomes, sharing the creative space with end-users was more challenging than we imagined especially the tension as to who owns the proposed ideas in codesign.

Figure 5. Bubble Day Out toolkit: Codesigning the asthma awareness day concept.

Figure 6. Bubble Day Out asthma awareness day concept: a) Creating the concept b) presenting the concept.

Dear Designer Diary:
Facilitating Participant Engagement

The asthma educators agreed at the end of our previous workshop that a diary to guide their future interactions with designers would be a promising idea to develop in the next workshop. The designers devised a toolkit called *Dear Designer Diary* to record the asthma educator's wealth of experience in delivering asthma information. The idea was that asthma educators would use the Dear Designer Diary when briefing future designers on asthma information requirements. The toolkit contained a ring binder supplemented by envelopes containing photos of people of different ages and genders in situations such as at home, at mealtime, at work or in the car. Asthma educators selected photos from the envelopes, pasting them onto the timeline in the diary to represent a day in the life of a specific asthma sufferer. They added speech bubbles and Post-it notesTM to describe common situations in respect to the chosen person's asthma condition (Figure 7).

The Dear Designer Diary toolkit was engaging for all participants in this group. The asthma educator appreciated the different options of photos, text and scenarios available in the envelopes (Figure 8). One asthma educator commented the diary

would be useful as it was an in-depth account of their collective experiences with various demographic audiences. The designer wrote in a reflection survey, *"I felt proud that my toolkit had been understood and was useful."*

In the Dear Designer Diary toolkit, the asthma educators did not want to stop working, expressing disappointment when the story pages were unfinished, when the time ran out. The designer of the Diary toolkit planned to spend five minutes developing each page in the booklet, but the asthma educators became engrossed in the first story timeline and the designer moved things along commenting in the reflection survey:

> The 9-year-old boy one went faster than the first one and then the 16-year-old one went even faster. But the fastest one was the 83-year-old man, when the facilitator gave the signal to end the activity, it was amazing how they [asthma educators] came up with the whole picture of asthma sufferers …so quickly …Suddenly, everything was clear to them.

In this codesign case study, we wanted the designers to shift focus from expert problem solver to facilitator. Initially the designer felt apprehensive about running this activity, reflecting, *"I thought I would probably need to work hard to*
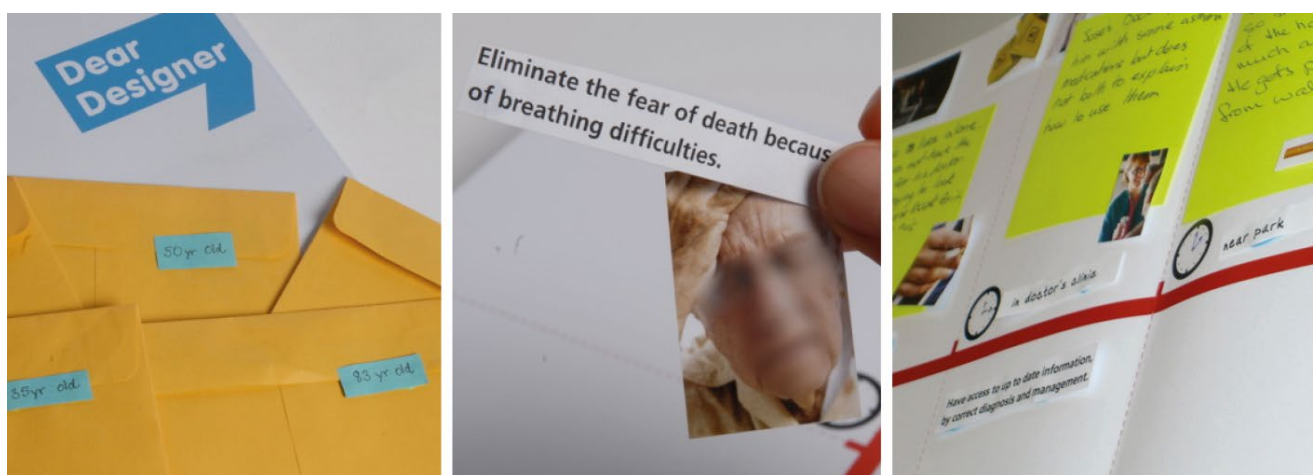

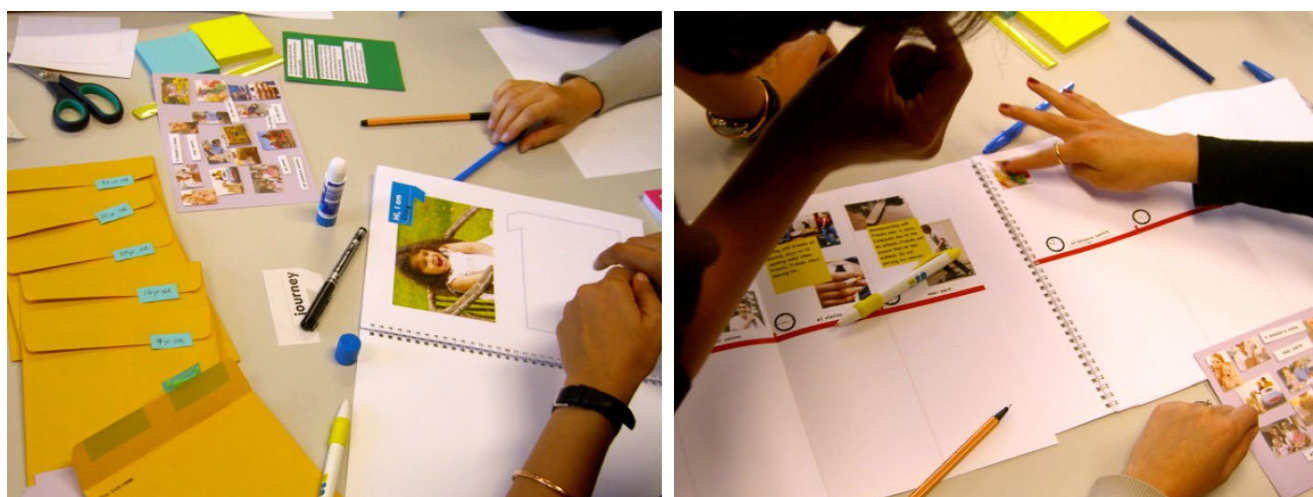**Figure 7. Dear Designer Diary toolkit:** Creating an asthma sufferer timeline.

Figure 8. Dear Designer Diary toolkit: Creating an asthma sufferer timeline.

gain the confidence of my group." Initial trepidation to embark in a codesign process was found in a case study conducted by Hanington (2007), whose students reported "exhilaration at the results that emerge from dynamic and inspiring research sessions" (p. 14). Hanington claims when this revelation occurs, it helps to replace negative stereotypes of conducting research with exciting new methods, showing designers the value that can be gained from participatory practices. In my research, the designer of the Dear Designer Diary toolkit commented, *"it went better than expected ...I was happy with the activity,"* reflecting the sentiments of Hanington's students.

A possible reason for the engagement success of this toolkit was the high level of input required from all participants. The designer commented that, *"the ideas and information gathered from the asthma educators' contribution was invaluable for the future of printed and electronic asthma information design projects and as a resource for the organization to keep."* In contrast to the Asthmate Folder, which appeared resolved from the beginning, the Dear Designer Diary was a package with design options, encouraging participation. The idea was that the Diary would be used by future designers as a resource for to begin future design or codesign project from of wealth of experience recounted by the asthma educators.

Asthma Stories: *Redefining the Client Brief*

At the end of our previous workshop all participants agreed to work on identifying typical stories that the asthma educators encounter in their work. The Asthma Stories toolkit aimed to explore the stories that the asthma educators hear on a daily basis in their work. This toolkit aimed to see what patterns emerged to enable streamlining of asthma information. The Asthma educators were encouraged to recall stories of asthma sufferers, incorporating text and image elements in an effort to blur the boundaries between the visual and verbal skills of the designers and non-designers.

At first, the Asthma Stories toolkit sought to gather stories about asthma sufferers expecting to categorize them by age and gender, initially without questioning the client brief. The group was asked to brainstorm all the Asthma Foundation's possible demographic audiences and ways to categorize asthma information. The following categories were identified: carers for people with asthma; schools; health professionals; children's services; the community; sporting industries; visitors to zoos and children with and without asthma. There was also a discussion about the importance of grouping information by asthma triggers which were identified as pollen, dust, smoke, dampness, and exercise. Figure 9 shows some of the Asthma Stories summary pages with image and text produced by the asthma educators.

The idea of categorizing asthma information around emotional triggers was discovered through an analysis of the patterns that emerged in throughout the whole asthma codesign case study. This toolkit contributed to this outcome as it clearly identified which robust participant discussion that the emotional state of people with asthma was more important than their age or gender when deciding how to categorize asthma sufferers and their situation. We repeatedly heard about the helpless child, the embarrassed teenager, the panicky student, the distressed mother and the frightened senior. One asthma educator described a helpless child called Dhillon, aged 3:

> Dhillon is playing away from the house in a sand box. He has asthma. Little Dhillon loves to play outside on a sunny day. The sandbox is definitely the best spot. My sand box is special; I can make so many tunnels and go so many places … A child's imagination is one to admire. How I wish little Dhillon would carry a bum bag with his reliever and action plan. Too often he plays far from the house–a farm is good but can be dangerous for this little tyke (Figure 10).

Throughout the codesign workshops, the asthma educators recounted their conversations with teenagers and their families. They told us about mothers who were frustrated because all the efforts they had made to keep their child safe from an asthma episode in their youth were set to unravel as their teenagers were embarrassed to take their asthma medication with them. They mentioned their conversations with teenagers who said they didn't want anyone to know they had asthma even if it meant risking an asthma episode rather than have medication on them when out of the home.
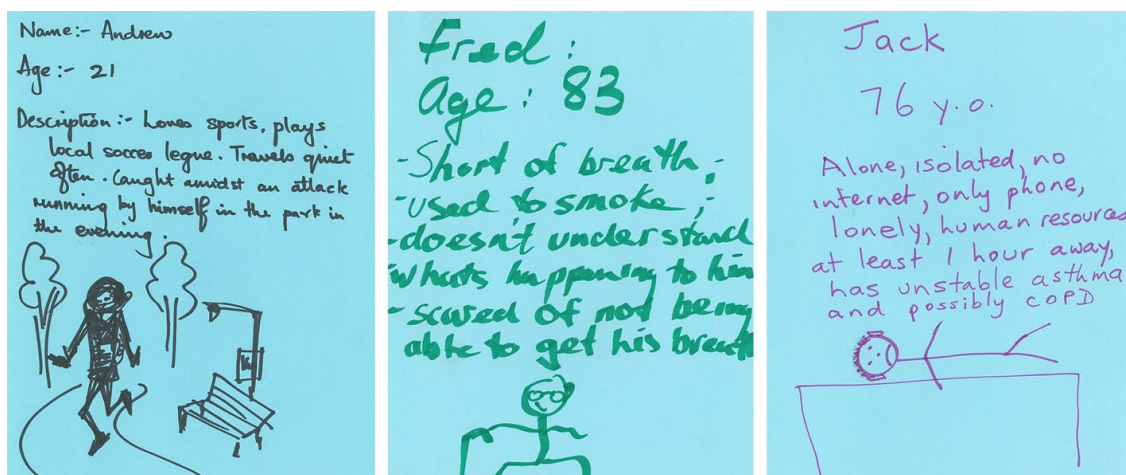

Figure 9. Asthma Stories toolkit: Andrew, Fred, and Jack's asthma story.
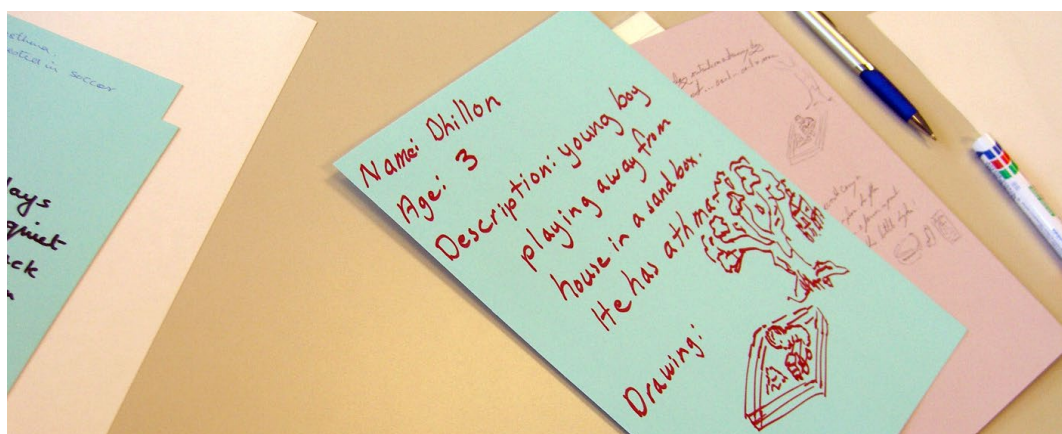
Figure 10. Asthma Stories toolkit: Dhillon's asthma story.

Putting voice to her conversations and stories over the years, one asthma educator recounted the story of teenager *David*, aged 16, who was too embarrassed to carry a puffer:

> David has had asthma all his life. Has not told his friends he has asthma. He has an asthma attack at a skate park. His friends think he is joking around. He does not have his reliever medication on him as it is embarrassing. Wouldn't it be great if all teenagers were educated in school about Asthma First Aid and did not make fun of people with asthma? Wouldn't it be great if puffers were so small, but still effective so that teenagers would not be embarrassed to carry them? Puffers could be available with attractive surface graphics, such as with football imagery, so that it becomes a cool device rather than medical device.

One asthma educator was concerned about an elderly frightened man he called Fred, recording him as:

> Fred Age: 83. Short of breath, used to smoke, does not understand what is happening to him, scared of not being able to get his breath, lives alone, wears glasses, uses a walking stick. Fred wakes at night coughing. How do I find out what's wrong with me? I do not understand all this new technology. Someone told me to 'giggle it'. Where can I get information? Wouldn't it be great if Fred had access to up-to-date information? Then Fred wouldn't be frightened of dying because he could not breathe (Figure 9).

Another asthma educator argued that the ultimate test of the effectiveness of the Asthma Foundation's information was whether it reached people in extreme situations. He came up with the idea of, *the frightened man on a boat* isolated without a computer who has an asthma episode. At different points in the codesign workshops, the asthma educator challenged the designers to question whether the design propositions would help, *the frightened man on a boat*. This gave us the idea to work with the extreme situations of asthma sufferers in the next steps of this asthma case study.

The designers were originally briefed by the client to categorize asthma information based on the age and gender of asthma sufferers. However, this Asthma Stories toolkit challenged the designers to rethink the brief. Identifying the emotions of helplessness, embarrassment and fear of asthma, gave the participants insights into novel forms of organizing information materials for the future, overlooked by previous design consultancies. Emotional rather than demographic categories of asthma sufferers surfaced after analyzing the findings from this toolkit. The captured stories were represented as 1) the embarrassed teenager who ignores their asthma management, 2) the frightened elderly man in a remote rural location experiencing breathlessness without internet, and 3) the helpless child, in a dangerous situation when distanced from adult carers. This Asthma Stories toolkit visually translated the asthma educators' rich experiences for the designers revealing the value of end-user tacit knowledge to trigger a challenge to the client brief.

Reflections

Keep Toolkits Unpolished

The asthma educators were not impressed by the toolkits that displayed a high level of polish, much to the dismay of the designers. Instead, they insisted on the outcomes being relevant for their purposes, suggesting graphic designers keep toolkits loose and unpolished. A possible reason the Asthmate Folder was resisted by the asthma educators is that it may have appeared a fully resolved design with little scope for development, possibly making the asthma educators feel redundant in the codesign process. The findings from the Asthmate Folder toolkit indicates the urge of graphic designers to produce a quality artefact as seen in Figure 3, spending time on polishing a design proposition at the expense of concentrating on designing a mediation toolkit where the design proposition may be unfinished. The designer of the Asthmate Folder was confident of her toolkit being accepted based on previous workshop's design decisions, so she presented a quality polished folder design. Previous research indicates that design teams spend ten per cent of their time on the *goal space* and the remaining ninety per cent on the *solution space* (Stempfle & Badke-Schaub, 2002), possibly explaining why the designer of the Asthmate Folder concentrated on a polished design outcome. In another codesign study, researchers generated typographical errors in a website design prototype to make it appear unofficial (Isomursu et al., 2003). The level of polished design displayed in

the Asthma Folder possibly could have distanced the end-users from the folder concept. This suggests there may be some benefit in keeping codesign toolkits a little loose and unpolished to allow for greater end-user engagement than polished highly refined toolkits. This would need to be tested in further codesign workshops.

Play Games to Dissolve Tensions

The use of games in codesign has been advocated by many authors (Brandt et al., 2008; Vaajakallio & Mattelmaki, 2014) Strong personality barriers were overcome while playing the card game in the Asthmate Folder toolkit. In the final reflection survey, several asthma educators reported that they did not like the Asthmate Folder nor enjoy the card game, even though they evidently enjoyed playing the game. A possible reason for this is while playing a game the participants were on a level playing field where organizational hierarchies were dissolved. The fun nature of playing a game, distracted participants from personal politics. This finding confirms the research of Brandt et al. (2008) who argue than any politics or difficult negotiations between designers and end-user are put on hold while playing codesign games. This suggests playing games is a useful codesign activity to dissolve participant tensions.

Share Ownership of Design Ideas

Codesign aims for all participants to be equally engaged in the design process. However, this case study found that at times the designers acted as outsiders sitting back and watching end-users highly engaged with creative ideas. Others have researched designers and end-users demonstrating a transfer between being an insider and an outsider. Visser et al. (2007) study invited designers and end-users to record insights on cards and found the designers spent time organizing the activity, feeling no need to add their insights, whereas the end-users were highly engaged in annotating the cards. This behavior could be interpreted as the designers acting as outsiders, seeing their job of having designed the cards as complete. The designer of the Bubble Day Out toolkit displayed similar behavior traits, as she observed the asthma educators interacting with her concept. The designer sat back and watched the asthma educators confidently discuss and present the finer details of the Bubble Day Out awareness day campaign.

The Bubble Day Out toolkit failed to foster joint ownership of ideas between the asthma educators and the designer. However, it worked in the sense that the asthma educators took the Bubble Day Out awareness day idea on board. At the conclusion of this codesign case study, the Asthma Foundation invited the designers to develop the Bubble Day Out concept further, to implement as a fundraiser event the following year, suggesting a successful outcome for the codesign process. In addition, subsequent to the codesign workshops, a design consultancy was briefed to redesign the brandmark for the Asthma Foundation of Australia and each Australian state. The brandmark was changed from a triangular swirl to a blue balloon, validating the designers' creative insight to represent the feelings of an asthma sufferer as being unable to breath, trapped in a bubble represented by the blue balloon (see

Figure 6). Blue balloons were chosen by the designers as codesign props as the asthma educators mentioned asthma sufferers' lips typically turn blue during an asthma episode. The new brandmark has been widely implemented, testifying to the success of the ideas developed in this codesign case study. Interestingly, in our codesign workshops the blue balloon was chosen to represent the feeling of being trapped without air and a sense of fear, however the final brandmark used the blue balloon to represent a floating sense of freedom where air is light and easy to breath. This suggests the value in sharing ownership in of ideas between participants throughout a codesign process

Design for Emotional Categories

We expected the first step in gathering graphic designers and asthma educators to codesign an approach to organizing asthma information would be to identify appropriate demographic groupings of asthma sufferers. We also thought the codesign process would explore the groupings of asthma triggers, as this was the historical way of dividing asthma information material. However, we found an alternative trend emerge throughout the workshops. The asthma educators repeatedly discussed situations where asthma sufferers react emotionally to their condition. Demographics were less important than the emotional reaction to asthma.

The importance of end-users' emotional states when accessing and understanding designed information materials in health communications has previously been written about (Lee et al., 2008). Authors acknowledge that psychological factors beyond the control of the designer determine how the public perceive the usefulness of public health information campaigns (Lee et al., 2008). Authors have called for further research to examine how particular emotions such as sadness, fear, and anxiety influence information accessing behavior, and it is hypothesized that specific negative emotions influence people to behave in a certain way (Lee et al., 2008; Ozkaramanli & Desmet, 2012). Others argue that the key to success in design is an in-depth and holistic understanding of people–their needs, hopes and fears and for designers to create a positive emotional experience (Jordan, 2007). This case study found that when participants are jointly invited to explore a project brief in a codesign process, assumed project parameters are redefined. Participation in the asthma case study workshops prompted the designers to focus on the asthma sufferers' emotional states rather than demographic groupings. When inviting non-designers to share the creative space traditionally guarded by graphic designers the project outcomes were redefined. This suggests that when organizing asthma information, as well as considering asthma triggers such as pollen, dust, smoke, dampness and exercise, it is worth considering emotional rather than demographic categories asthma sufferers.

Focus on Relevant Design Concepts

Surprisingly, the graphic designers realized that normally they design with no knowledge of their end-users, researching the client via the Internet, in isolation from actual end-users. The

participant reflection surveys showed that the designers initially struggled to share the design space with the asthma educators commenting they felt, *bogged down, lost and irrelevant*. The designers expressed reservations about the codesign processes, revealing the strong preference of designers to remain in control of the design process. Eventually, however, by the end of codesign process the designers felt excited by work of creating codesign toolkits and activities, rather than jumping straight to designing concepts intuitively as they typically would have. They saw the benefits of facilitating creativity with its scope for understanding the real design context. One designer admitted in the reflection survey, *"without this engagement, any designs produced, no matter how aesthetically and conceptually innovative, would have been irrelevant for the Asthma Foundation."*

Throughout the workshops, the designers reflected on how the codesign process influenced their role as graphic designers. At an early point in the process, a designer suggested, *"Maybe the end-users could be divided into Generations X, Y and Boomers because we know that these generations are so distinct in their approaches to life."* However, the designers realized that this suggestion in the end would have been inappropriate. One designer reflected after the workshops, *"Codesign is a useful method to make sure we designers stay on track as to what are the end-user needs."*

This designer realized that identifying the essence of the project is paramount for appropriate design outcomes. Another designer reflected that usually when working with a client there is a set goal and a series of parameters put in place for achieving that goal, however codesign is different. She commented in the reflection survey:

> Here it was a living brief. The outcomes and criteria are changing as the project moves along. We have a tendency to get carried away with our ideas, even if they are not ideal for the end-user. These activities act as a reality check for us designers. Codesign is a great strategy for the design project to stay on track. It is quite open ended and constantly evolving. The real problems emerged which I guess would not if it were a conventional design process.

The importance of identifying the right problem and not jumping to design outcomes that are irrelevant is acknowledged by Friedman (2003) who argues the designer becomes, "a critic whose post-solution analysis considers whether the right problem has been solved" (p. 511). One designer claimed that a key benefit of codesign is that it identifies the *real problem* of the project at hand.

Be Flexible with Time and Cost

This case study showed the need to be flexible in codesign was important to its success and this challenged the designers' conventional way of working. Codesign has been criticized as being costly and for taking too much time (Stempfle & Badke-Schaub, 2002). Economic constraints, time pressures and teamwork factors are issues that designers need to address in their daily work. This case study shows that flexibility in codesign was a pressing practical issue above time and money factors.

It has been argued that codesign requires facilitators to be flexible and spontaneous in whatever methods they use and to change course quickly if the situation requires it, or when serendipitous discoveries are made (Stempfle & Badke-Schaub, 2002). This case study supports this view, finding that the workshop activities required flexibility on the part of the designers and the facilitator, allowing for frequent changes and disruptions because of external constraints. There were instances where activities needed to change course or be cancelled altogether. The case report is organized under the headings *planned activities*, a*ctual activities*, reflection on *changed activities* and *suggestions for next time*, demonstrating the need to keep flexible. The first workshop was delayed fifteen minutes as participants arrived late because of traffic congestion. Losing 15 minutes cut out scope for the first icebreaker activity. We did not have access to the room beforehand, so toolkits had to be portable and convenient to set up.

Limited resources were a key concern of the end-users where the cost of producing proposed ideas was raised in each workshop. For example, the idea of a sports-branded asthma puffer provided sponsorship opportunities to counter any cost concerns. One asthma educator said, *"This is all very well but what about resources and limitations?"* The industry graphic design consultant we had invited to observe the case study expressed concern how spending this amount of time on idea generation and discovery phases of design project could not be done in a standard commercial context. He was constantly focused on the design outcomes, stating, *"Everyone in the process [end-users and designers] could do with a constant reminder of the need to work towards a tangible outcome."* This echoes others who have criticized codesign as taking place in *greenhouse settings* which wouldn't survive the commercial world of limited resources, conflict and time constraints (Kensing & Bloomberg, 1998). Others have shown that in order to achieve a creative design result it is necessary to keep the cost and task inherent constraints to a minimum (Savage et al., 1998). While the issue of working quickly and staying on track was important for the industry consultant, it was not important for the asthma educators. This suggests flexibility with time and cost in a codesign project is required. Although it is worthwhile noting that this project centered on the idea generation stages of design rather than design production stages where deadlines and cost limitations may have been more pressing.

Conclusions

This case study trialed codesign in graphic design. The aim was for designers and asthma educators to codesign an approach to organizing asthma information in a series of workshops. The findings, drawn from four codesign toolkits, show underlying client assumptions were challenged, where the designers were challenged right to the end to stay focused on relevant project ideas. New ways of defining asthma information were uncovered in this case study. Grouping asthma sufferers, according to their emotional responses to asthma was a new approach for the client, who previously divided asthma information by age, gender, and asthma triggers. In particular, the feelings of the embarrassed teenager, the frightened elderly man and the helpless child became

evident, not previously identified using conventional graphic design. This outcome is noteworthy as it challenges the designer's role as intuitive problem solver, highlighting the value of codesign processes to make visible appropriate project outcomes rather than working in a vacuum, without end-user insights.

This research represents codesign as a positive addition to graphic design practice, though within limits. A case study in design is context specific meaning the findings may not be generalizable in alternative projects. Several possible factors could have influenced the findings, such as the nature and order of the activities, personalities and hierarchy of participants, group dynamics, organizational issues and staff conflict. The masters' students had industry experience, yet they were younger than the asthma educators, with implications for codesign group dynamics.

It is well known for designers in related fields, when codesigning with end-users is essential to check in on their needs and preferences, to ensure relevant design concepts for end-users. This case study shows the field of graphic design needs further practice in inclusive, participatory and codesign methods and design students need further codesign tuition in codesign to embed the concept of designing *with* not *for* end-users in graphic design practice. Other design disciplines can learn from this case study that codesign is a useful method when designers shift their assumed role from *creative expert* to *facilitator*. In this sense graphic designers' area of expertise can be redefined to include acting as facilitator of end-user's creative input. Graphic designers undertaking codesign need to keep an open mind about their role to: keep codesign toolkits unpolished; play codesign games to dissolve tensions; share ownership of design ideas; design for emotional demographic categories, focus on relevant design concepts, and be flexible with time and cost. These reflections suggest that taking the time to codesign allows discovery of important project insights, outweighing the tensions graphic designers face when sharing creativity with non-designers. Future codesign studies could begin with clearly establishing new roles for all participants up front to help resolve some of the tensions observed in this case study.

Acknowledgments

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