National Paediatric Hospital Project
Tender for the Provision of Children and Young People Consultation Advisor Services

PHYSICAL PLACES AND SOCIAL SPACES FOR YOUNG CHILDREN IN HOSPITAL

February 2010

(Hospital design created by children aged 5-6 years)

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1.0 BACKGROUND

1.1 Introduction

The past number of years have witnessed marked change to and heightened interest in the physical and social environments of children's hospitals (e.g. Hutton 2005, Coad and Coad 2008). Despite this, knowledge about what constitutes a child-friendly hospital environment has been lacking with policy largely built around adult assumptions about what children need and want (Birch *et al.* 2007). However, children and young people's priorities and preferences for hospital design may differ to those of adults. This has been demonstrated to be so, especially for younger aged children (Birch *et al.* 2007). Yet, in many studies the views of younger aged children are under-represented. The imminent development of a new Children's Hospital of Ireland provides an opportune time for consulting with young children to ensure that their views are embedded in the design, construction and operating principles of the Children's Hospital of Ireland, because in the nomenclature of Hutton (2005: 537)

> ***"The built environment of the hospital is one of the first indicators that a hospital is built for its clientele".***

1.2 Aim

This consultation process explored young children's (aged 5-8 years) perspectives of the physical and social hospital environment to ensure that the physical places and social spaces of the proposed new Children's Hospital of Ireland would be responsive to their needs.

1.3 Objectives

1. To explore young children's perspectives, and use, of the physical and social spaces of the hospital environment.
2. To explore what young children (aged 5-8 years) perceive and value as an 'ideal' hospital environment, both physically and socially.

3. To advance recommendations for the design and enhancement of the physical and social spaces of the hospital environment for children aged 5-8 years.

1.4 Data Approach

Data were generated through the use of active fieldwork with young children in hospital using both verbal and visual *participatory methods*. These participatory methods included drawing, arts and crafts and a closed questionnaire (alongside which open questions were used to explore the responses chosen by the child participants). As a consequence of a number of factors (e.g. hospital environmental context, infection control issues, difficulty of getting a group of children together due to numerous reasons, and childhood illness/condition/interventions) the majority of engagements with the young children took place at their bedside on a one-to-one basis. During these engagements children completed the closed questionnaire about the hospital and drew pictures of what they envisaged a really great hospital room would look like.

In two of the three participating children's hospitals, an art and crafts workshop was held with a small group of 3-4 children with the assistance of an artist (i.e. one workshop in each hospital). These workshops took place in the playroom areas and incorporated the use of arts and crafts, and mapping, to design what young children perceived an ideal hospital environment might look like. Where appropriate, the interactions with children were digitally recorded and in all field work, electronic field notes were recorded following dialogue with each child (i.e. after questionnaire completion and drawing).

All data (i.e. text and visual materials, typed transcripts, and questionnaires) were subjected to thematic content analysis (both in terms of visual and verbal representations) to enable the identification of common emerging patterns and themes.

1.5 Ethics

Ethical approval was granted by the Ethics Committees of the three children's hospitals and access negotiated with the Chief Executive Officers and Directors of Nursing. Hospital personnel were informed verbally and in writing about the consultation process with young children. Written parent consent was obtained and children verbally assented to take part. Young children's identity was protected by ensuring all data were devoid of any identifying features. No names, addresses or any child personal details were recorded. To maintain anonymity of the three hospitals all data is presented collectively and identifiable features omitted.

2.0 FINDINGS

2.1 Participants

Fifty five young children were purposively selected from the three children's hospitals in Dublin. Demographic details of all child participants were recorded including age, gender, ethnicity, geography (i.e. urban versus rural living area), length of hospital stay (i.e. short stay less than one week versus long stay greater than one week), type/severity of illness, and previous hospital admission/s.

Of the 55 child participants, 5 children were inpatients for greater than one week (all but 1 of these 5 had previous experience of hospital) and 36 children were inpatients for less than one week (12 of these 36 children had no previous experience of hospital and 24 of the children had experienced a previous hospital admission). Nine children were recruited form the Out Patient Department; all had long term conditions and previous experience of hospital. Three children were recruited in the Emergency Department; all had no previous hospital encounters. Two children were recruited from the Day Ward; both had long term conditions and previous experience of being inpatients in hospital.

A summary of other details are provided in a series of tables 1-3 below.

Table 1: Specialty of Child Participants

Specialty	Total No.
Autoimmune	1
Cardiology	2
Dermatology	2
Diabetes	3
Endocrinology	3
Ear, Nose Throat	4
Gastroenterology	6
General Surgery	5
General Investigations	3
Haematology	4
Metabolic	1
Neurology	3
Oncology	3
Ophthalmology	1
Orthopaedic	4
Plastic Surgery	2
Renal	1
Respiratory	7
Total	**55**

Table 2: Gender and Age of Child Participants

Age	Boys	Girls	Total
5 years	9	5	14
6 years	3	8	11
7 years	8	8	16
8 years	4	10	14
Total	**24**	**31**	**55**

Table 3: Ethnicity of Child Participants

Ethnic background	Total
Irish	46
English	1
African	2
Nigerian	2
Irish/Nigerian	2
Irish/Filipino	1
Irish/Malaysian	1
Total	**55**

2.2 Questionnaire Responses

Fifty of the fifty five child participants (5-8 years) completed the questionnaire about what they thought about the current children's hospital environments. The questions and quantitative responses to each question are presented in numerical percentages in table 4 below. In the next section the thematic concepts are presented.

Table 4: Responses to Questionnaires across all 3 hospitals (n=50)

Questions/Response Options to Questions	Yes	No	Not Sure
1. Do you think the hospital looks nice and friendly?	96%	2%	2%
2. Does the hospital feel homely?	32%	56%	12%
3. Is there somewhere nearby you and the other children can go to play?	72%	14%	14%
4. Is there somewhere nearby you and the other children can go to school?	46%	34%	20%
5. Is there enough room in hospital for your family and friends to visit and spend time with you?	38%	38%	24%
6. Can you choose what you want to do when in hospital?	40%	24%	36%
7. Are there things for you to do in the hospital room at your bedside?	64%	22%	14%
8. If you want to sleep or be on your own is there a quiet place where you can go?	38%	38%	24%
9. Are the rooms/walls decorated (colours, lights, pictures) in a way that boys/girls your age would like?	46%	30%	24%
10. Is there enough room around your bed for all your stuff?	44%	38%	18%
11. Can you keep in touch with your friends at home?	32%	56%	12%
12. Is there a garden or somewhere outside that you can go?	26%	62%	12%

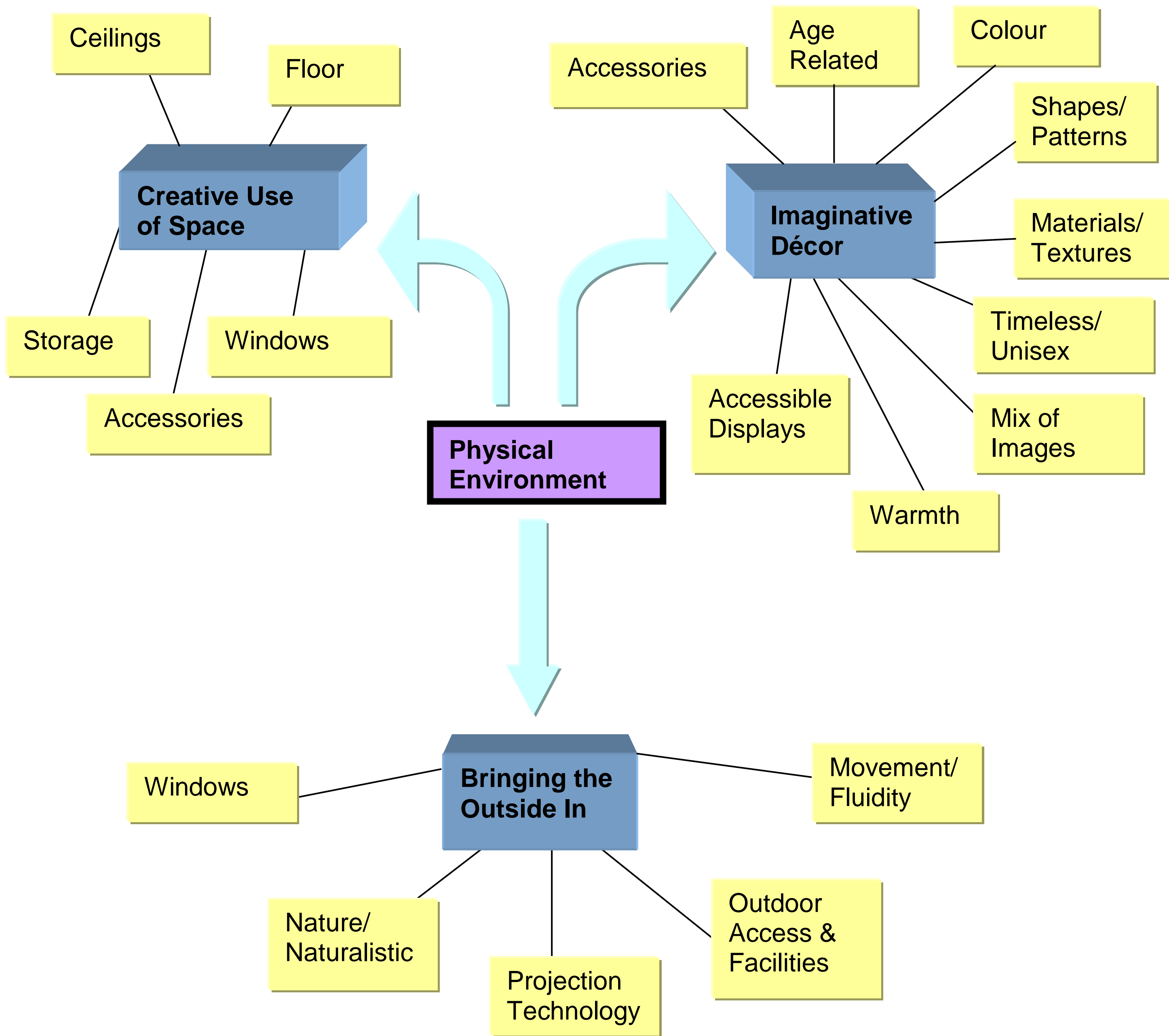
2.3 Thematic Findings

Children’s questionnaire responses, audio-taped art and craft workshops and children’s visual images/drawing were collectively examined to yield data to answer the aim and objectives set for exploration. Five *broad themes* emerged, namely, “*physical environment*”, “*access*”, “*personal space”,* “*leisure/entertainment”* and “*socialisation”.* Within each theme a number of sub-themes, known in this report as *organising themes* were identified. The *organising themes* reflect the core *elements* that emerged from the data. Each theme will be presented both visually and descriptively.

2.3.1 *Physical Environment*

Physical environment refers to the actual physical features of the internal hospital environment that children could see and feel. This first theme, physical environment consists of three organising themes; *creative use of space*, *imaginative décor* and *bringing the outside in*. The key elements of these organising themes are visually represented in Figure 1 below.

Figure 1: Theme 1: Physical Environment



Key:

Broad Theme
Organising Themes
Elements

2.3.1.1 *Creative Use of Space*

A key theme to emerge from young children was the effective and efficient use of space. As children looked around the hospital environment they were currently inpatients within, they recognised the limitations of space. However, children also offered suggestions about how the physical space could be creatively capitalised upon. For example, children spoke about using the *ceiling as a mechanism for visual displays* such as pictures, stickers, mobiles and star lights (see images 1 and 2 below).

A number of children also discussed using the *floor as a space* to play, stating that it was often difficult to play sitting in bed with a bed table in front of them and secondly they were more used to playing on the floor in their homes. Children referred to the potential use of *carpet* space on the floor as a *reading area*. In a number of the children's drawings, *accessories* such as *cushions* and *bean bags* were used to illustrate cushion chairs on the floor where they and/or their parents/siblings could sit (see image 1 below). In one of the art workshops, children designed a corner of the playroom with lots of cushions on the floor and called it a *"reading area"*; a quiet place where they could go and relax/chill and read books.

What would a reading place need?
"Nice fluffy cushions" (Girl 7 years)

Children also mentioned the possibility of having *creative child friendly storage*, for example, triangular shaped wardrobes, colourful presses, shelves for storing their toys, books and things so that they could visually see them and the use of toy boxes at the bedside. In their artwork children created many different shaped *windows*, for example large circular windows and star shaped windows (see images 1 and 2).

Image 1: Design of an Ideal Hospital Room by Girl 8 years

Box 1: Outline of Child's Design (Image 1)

She drew a bed for herself in the centre of the room and drew two more *beds* (at the bottom of the picture) one for her mum and one for her dad. Her own bed would have pink blankets, pink sheets and a pink *soft* pillow. Her dad's bed covers would be blue with a black pillow and her mum's bed covers would be red with a white pillow. Next to all three beds were *pillows on the floor* or *pillow chairs*. She would have *two large round windows* - she equated these to windows she had seen in a hotel she had stayed in before. There would be *toilet* in her room as well with a *purple door*. The *door* into her room was *red in colour* and there would be a *soft carpet* (orange) on the floor. The *pictures* she would have on her wall were of her *family (mam, dad and her brothers), a car and a house*. She would also have a *painting* illustrated by the *flower* on the wall. She used music note stickers to illustrate *decoration on the roof/ceiling* and *patterns on the walls.* She drew a *set of drawers next to her bed* for all her things - which would not be brown like the current locker beside her bed but would be *pink, purple and red*. On top of the set of drawers she drew her *books and a pencil* or it could be a ballpoint pen she stated. On her bed she drew her *doll and two teddies* which she had brought to hospital with her. She also put a *mirror* on her wall.

2.3.1.2 *Imaginative Décor*

The majority of children showed a preference for imaginative décor which for them included different *colours*, *materials and textures*, diverse *shapes and patterns*, *accessibility*, and *generic timeless unisex designs* suitable for children of all ages. The key factor for children was that the décor would be "*modern and creative" (Boy 8 years)*. While many of the children spoke about different characters (e.g. Disney, Ben 10, fairies and princesses), popular programmes/films (e.g. High School Musical), celebrities (Hanna Montana) and interests (e.g. sport such as football) they did acknowledge that different children, especially of different ages and genders, would have diverse interests in what they would like as images on walls (i.e. *age related*). It was clearly evident that images/décor could be simultaneously liked and disliked according to each child's personal viewpoint. For instance, from the questionnaire, just slightly over half (54%) of the children stated *no or not sure* to the question, *"are the rooms/walls decorated (colours, lights, pictures) in a way that boys/girls your age would like?"* This illustrates the challenge of meeting the diverse needs of children of all ages and the necessity to ensure that a *mix of images* is used to address the interests of both boys and girls. There was some commonality of décor such as naturalistic design and the incorporation of natural elements in the design e.g. sea, plants, beach, rainbows.

Some children mentioned the use of posters, as a way of having transient changeable images. In one of the hospitals, a key area that stood out for the children where murals painted the full length of the wall. Interestingly, these murals were not linked to any time limited popular characters but were large and colourful and made the children feel *"bright and distracted".* It was also important, according to the children, for images and pictures to be *displayed at an appropriate height (accessible displays)* for them (i.e. young children's eye level).

Other children were not as keen about the need for displaying pictures on the walls in their rooms (but did like them on the corridors) and spoke more about

colour everywhere such as the walls, floors/carpets, beds/blankets, ceilings, curtains and storage units (see images 1 and 2). Children liked the use of different colours (e.g. blues, pinks, reds, yellow, orange, purple, green, brown etc) along the corridors and in different areas around the hospitals but spoke about the majority of walls in the rooms of the hospital being painted white/yellow. While the meaning of colour itself for children needs much more subtle and in-depth exploration[1], some key things that children spoke about were, the use of bright and rainbow colours. There were also some gender differences such as girls stating that they would like pink rooms and boys preferring blue and red colours. However, both sexes recognised the need for more neutral colours to *accommodate all tastes (i.e. unisex)*, such as greens and yellows, to mention a few.

Do you like pink?
No, it's for girls (Boy 5 years)

A notable feature in many of the children's artwork, depicting their ideal hospital room/environment, was their use of different *materials and textures,* which the children often referred to as shiny, smooth, fluffy, woolly and soft. One girl stated that the floor should be *"fluffy"* because;

"If it's [floor] shiny and you wash it, you might go woopsie" (Girl 5 years)

Children frequently mentioned having nice *accessories* such as soft pillows and bedclothes (e.g. duvet), soft beds and *'comfy chairs and sofas with lots of cushions'*. They were also concerned with the floor covering and the use of *carpets* – *"a carpet that is bouncy"* - or *mats* – *"a pink fluffy mat"* - to meet the desire for *"warm flooring"* when they stood out of bed, as opposed to stepping out onto what they perceived as currently a cold floor. When asked about moving

[1] Children's exact preference for final colour choice was not fully explored given the limited time frame for data collection, thus, requires much further investigation. However, previous work such as that by Coad & Coad (2008) found that children and young people repeatedly choose mid to paler colour ranges such as blue-green and yellow-oranges; so the concept of 'bright' colours needs much more subtle exploration with young children.

from her room to the playroom, along the hallway, and what would this hallway need for instance some pictures or some windows, one 7 year old girl stated *“maybe a nice carpet”* and went to select some material (yellow) to construct the carpet within the hallway.

Image 2: Design of an Ideal Hospital Room by Girl 7 years

Box 2: Outline of Child’s Design (Image 2)

The child participant (Girl 7 years) started with a drawing. First, she drew her bed with *colourful* bed clothes and a *triangle* pillow which would be all different *colours* as well, she stated. Her floor would be *tiles* of all different *colours* and *shapes*. She would have her *own bathroom* in her room like the room next door which she had been in before. She drew an outline of a toilet and coloured in the seat in different *colours to make it look nice.* She had a *window* which would look out at some *trees*. Above her bed she drew a *round shiny light* (silver with light shining out from it *over her bed*). She drew a framed picture and decided there would be *stars and love hearts* [shapes] in it and she also used a *star* to illustrate a design on the wall. She drew a *TV attached to the wall* and it also had a *DVD player* and there was a princess on it. Her *ceiling* would have all *triangular shapes* decorating it; all different *colours* which she could look up at. At the far end of the room she used some fabric to illustrate a *colourful curtain.* When asked about things to do at her bedside she stated her *Nintendo DS* (which she brought in with her from home).

A common theme throughout the children's artwork was the use of different *patterns* and more notably *shapes* such as triangles and circles. Patterns and shapes were not limited to wall décor. For example, children designed square floorings, triangular images on ceilings and triangular shaped storage systems such as wardrobes/presses (see images 1 and 2 above).

2.3.1.3 *Bringing the Outside In*

A strong finding amongst all the children was the inclusiveness of *flora* and *fauna* within the design of the hospital décor *(i.e. nature/naturalistic).* For example, they spoke about, or included imagery in their drawings/art work, of trees, plants, green grass, soft moss, birds and flowers. Such images could be used to decorate the walls of their room or for general décor like bed covers/ duvets. Children spoke about the possibility of going on a *'nature walk'* and having a garden with *outdoor activities/facilities* such as a *climbing frame, swing, seesaw, a 'bouncy yoke'* and *hopscotch.* When asked what they would do on the nature walk one girl stated:

> *"Look at stuff, bugs, bees, and birds....walking and looking at animals and insects" (Girl 6 years)*

Children mentioned *animals* that they liked or would like to see as pictures on walls, for instance, *rabbits, horses, dogs, sheep, ladybirds, butterflies* and *"all different kinds of birds".* Sometimes these animals equated to *pets* children had at home that they missed when in hospital. Children also spoke about animals from their favourite movies such as Madagascar the animal DVD and Fantastic Mr Fox. The fish tanks which were located in different areas within the children's hospitals were a real eye catcher for the young children and one child drew a fish tank in her bedroom (see image 3 below).

Image 3: "A Magical Room" Designed by Girl 6 years

Box 3: Outline of Child's Design (Image 3)

When asked to draw a really great/nice hospital room she stated she would draw *"a magical room".* She drew *stars* and *flowers* at the top of the page and a *red wave* across the page with a pink ribbon underneath; she used an extensive *range of colours* and she stated that her favourite colours were blue and purple and then next green because of witches! She drew a large long bed with *multicoloured bed clothes* (pink, blue and purple). To the right hand of her drawing she drew what looks like a pot with a flower coming out of it and when asked what this was she stated that this was the *"magic".* Next she drew a *fish tank* and a *TV with a remote control* and talked about programmes she didn't like (such as Teletubies; Starwars; Spiderman - although she did like Batman). She also drew some *toys* in her picture at the bottom - a jack in the box and while she stated she didn't have a jack in the box it was something she would like; she also drew a *teddy* and her *doll* (like a Barbie with really long hair). She drew two *windows* in her drawing; when asked what she could see out the window she stated *"cars"* and when asked what she would like to see when she looked out the hospital window she stated *"Disneyland".*

Children spoke about the limitations on possibilities for *outdoor access* during their hospital stay, nominally as a consequence of restricted movement and/or lack of outdoor facilities within the hospital environment (i.e. 74% of children who completed the questionnaire stated that there was no, or they were not sure if there was a, garden in the current children's hospitals); highlighting the need for consideration to be given to *fluidity of movement* throughout the design of a hospital. When asked if they knew if there was a garden in the hospital or somewhere outdoors that they could go, the majority of children were unaware of any outdoor/garden facilities within their current hospital environment. Although, there was a general perception among many of the children that even if there was an outdoor area and/or garden/playground in the hospital, they would not be allowed to go there, because they were not allowed to leave the hospital indoor space and also it would be too cold;

> *"Not allowed go out, only mam allowed go outside as not sick" (Girl 6 years)*

> *"But in hospital you can't go outside till they let you out" (Girl 5 years)*

While a few children stated that they could see a small outdoor area from their bedroom they did not think they could go there because they had never seen anybody out there (i.e. underutilised). Children felt that it would be good if there was a real or simulated garden area in the hospital that they could use for walking and/or activities like hopscotch and toys to play with *(i.e. outdoor facilities/activities).*

Interestingly, many of the children included *windows* in their drawings/artwork and when asked about what they could see from their hospital window (i.e. window view), they mentioned the hospital building itself, people, cars, the road/ground below, construction work, the sky, dust and *"just muck out there" (Boy 5 years).* Other children relayed that their *view to the outside world was*

blocked because the window blinds were pulled down/closed and/or the window glass was frosted.

Image 4: Design of a Hospital Garden by Girl 6 years

Box 4: Outline of Child's Design (Image 4)

During the art workshop children were designing bedrooms and other rooms they would like to have in the hospital. One girl decided to design a *garden*. This is illustrated above in image 4. In the garden, which would be *accessible from the playroom* of the hospital, there would be some *outdoor activities* like *hopscotch* (illustrated by the silver squares), a *swing* (illustrated by the colourful seat and blue and yellow poles), and a *bouncy ball/yoke* to bounce on (i.e. the orange paint next to the flower next to the swing). At the far end of the garden, next to a big *tree*, there would be a *table and a chair/bench* with *soft cushions* [i.e. a quiet place to go]. She stated that anyone could go here to sit such as the child patients, their parents and also the health professionals. Throughout the garden design she designed *flowers* and included some *animals* like a *butterfly and ladybird*. There was green *grass* and a *blue sky* with the *sun shining* in the corner and a *rainbow* and *stars* overhead.

Children felt that a view of a garden with trees, flowers, plants, grass and birds (i.e. exposure to views of nature) would be ideal. One child suggested a view of

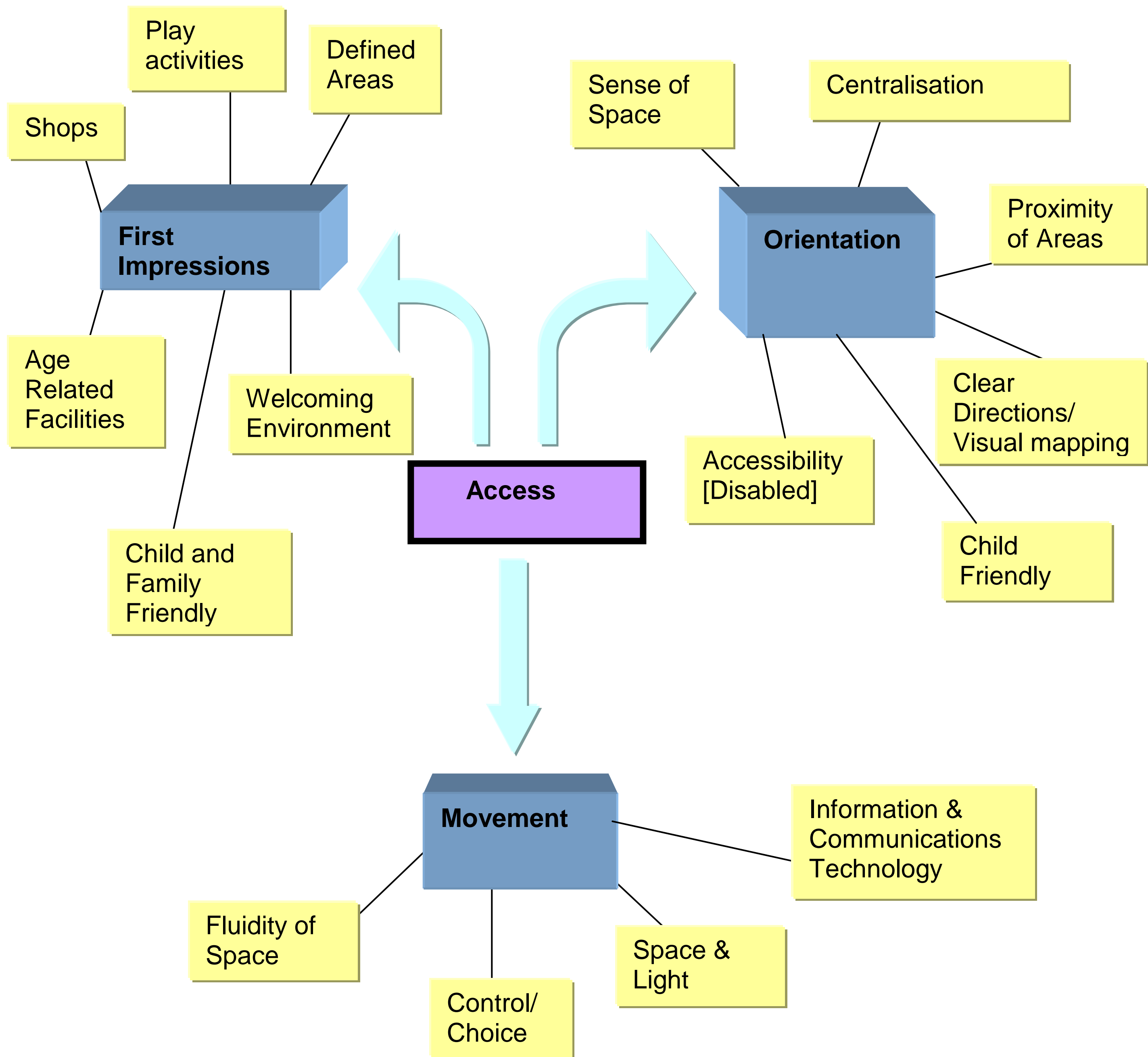
mountains with snow and people snowboarding, probably representative of the time of year and weather at time of data collection, and another child stated a view of "Disneyland". Areas of potential impact on the new hospital may include the imaginative use of *projection technology* to provide an imaginative and creative use of space[2]. Image 4 above illustrates a design of a hospital garden produced by a 6 year old girl during one of the art workshops. There appears to be a need to either create such a view or simulate such a vision to enhance the aesthetics of the hospital environment from the children's perspective. It would be most beneficial for children whose movements are restricted for various reasons.

[2] The Open Window Project is an example of the use of such technology. It is an art intervention used in the treatment of patients with haematological malignancies (i.e. in protective isolation in single rooms with restricted visiting).

2.3.2 *Access*

The second broad theme, access refers to entering, exiting and moving around the physical hospital space. This theme is comprised of three organising themes; *first impressions*, orientation and *movement*. The key elements of these organising themes are visually represented in Figure 2 below.

Figure 2: Theme 2: Access



Key:

Broad Theme
Organising Themes
Elements

2.3.2.1 *First Impressions*

Thoughtful consideration needs to be given to *defined areas* where children first encounter the hospital environment. Children discussed key features that they remembered about the physical and social environment when first entering the hospital. The majority of the children mentioned the nice and friendly hospital personnel which created a *welcoming environment;* in addition to physical features such as creatively designed walls (refer to physical environment theme). Children highlighted the need for *adequate age related play facilities/activities* in waiting areas (e.g. Outpatient and Emergency Departments). Without the availability of such activities, children reported feeling bored and inadequately distracted from interventions going on around them; thus emphasising their need to be occupied and distracted. Some of the children's current experiences of such areas were that while there were some play facilities available, these were often *babyish* and *insufficient* to cater for the number of children attending. The need to ensure that spaces are both *child and family friendly* was highlighted; whereby children relayed that their current experience was that waiting and play areas for both child and adult were limited, narrow and integrated (i.e. waiting areas were also play areas and these areas were for both child and family).

2.3.2.2 *Orientation*

From the things that children spoke about, it was evident that they wanted to have a clear sense of where they were, within the context of the whole hospital environment (i.e. a *sense of space*). For instance, children spoke about the hospital environment as a big place, much bigger than home. Some children relayed that they had a lack of awareness of where the playroom or school was in relation to their own rooms/beds and highlighted the importance of having a sense of space. Yet, some other children felt that children needed to be visually aware of where the playroom was because they could visibly see it from their bedroom and they were able to *manoeuvre freely* between their room and the open play areas (i.e. *proximity*). Within the art workshops, when developing their visual image of what an ideal hospital might look like, children designed a

centralised image (i.e. individual bedrooms situated around the outside of the building and all leading into shared areas such as the playroom in the middle) with clear *signage/directions* and *visual mapping* to enhance their *way finding* when moving between their bedroom and other areas of the hospital, as the following quotes illustrate.

> *"Maybe like a little map....so you can look up, that's my playroom that's my room" (Girl 5 years)*

> *"Maybe they can just show pictures so maybe your name because, you know your name, that ones my room" (Girl 5 years)*

> ***When you go out of your room where would you like to go?***
> *"Then into the middle where there is a playroom" (Girl 7 years)*

Some suggestions put forward by the children were the possibilities of having all different coloured bedroom doors which would enable them to easily identify their bedroom, and also the use of *sign* illustrations on the floor, such as the use of arrows or colourful flooring with different patterns and shapes to help children find their way around (i.e. child friendly signage), as the following quotations illustrate.

> ***What are you making?***
> *"A path to the playroom" (Girl 6 years)*

> *"I'll make a path that leads from the playroom to [to the garden]....like stepping stone path" (Girl 6 years)*

> *"Arrow to go that way and arrow to go that way...so you say which way is that way, playroom or is it my room" (Girl 5 years)*

The above quotations were relayed during one of the art workshops, when the children used arrows and designed a *"stepping stone path"* leading from a playroom to an outdoor area; inviting children into a new area of exploration (see image 5 below). *Child friendly directions* were deemed important for enhancing children's control within the unfamiliar hospital environment. Children also acknowledged the need to *cater for children with disabilities* and how they might move around the building; for instance some children felt that there should be no

stairs to enhance the *accessibility* for children in wheelchairs. Another boy with a visual impairment spoke about the need for *"banisters"* and *"straight walls"* to enhance his ability to find his way/move around freely.

Image 5: Hospital Map/Plan Designed by Children (aged 5-7 years)

Box 5: Outline of Children's Hospital Design (Image 5)

This image represents the product of one of the art workshops with a small group of 3-4 children (coming and going) who were aged between 5 and 7 years. Firstly, children worked to design their own individual bedrooms and then were asked where they would place them in the hospital building. Children decided to place their rooms all around the outside of the hospital building with pathways/corridors leading from each of their rooms into a playroom, shown here in the middle of the image. Off the first playroom was a second playroom or technology room as it housed all the electronic games such as the x-boxes, the TV's and computers. Off the first playroom is the stepping stone path; inviting the children to wander out to the garden and outdoor play area. What this image illustrates is a centralised hospital map which allows for children's ease of movement between their bedrooms and the playrooms etc. It enhances children's sense of space.

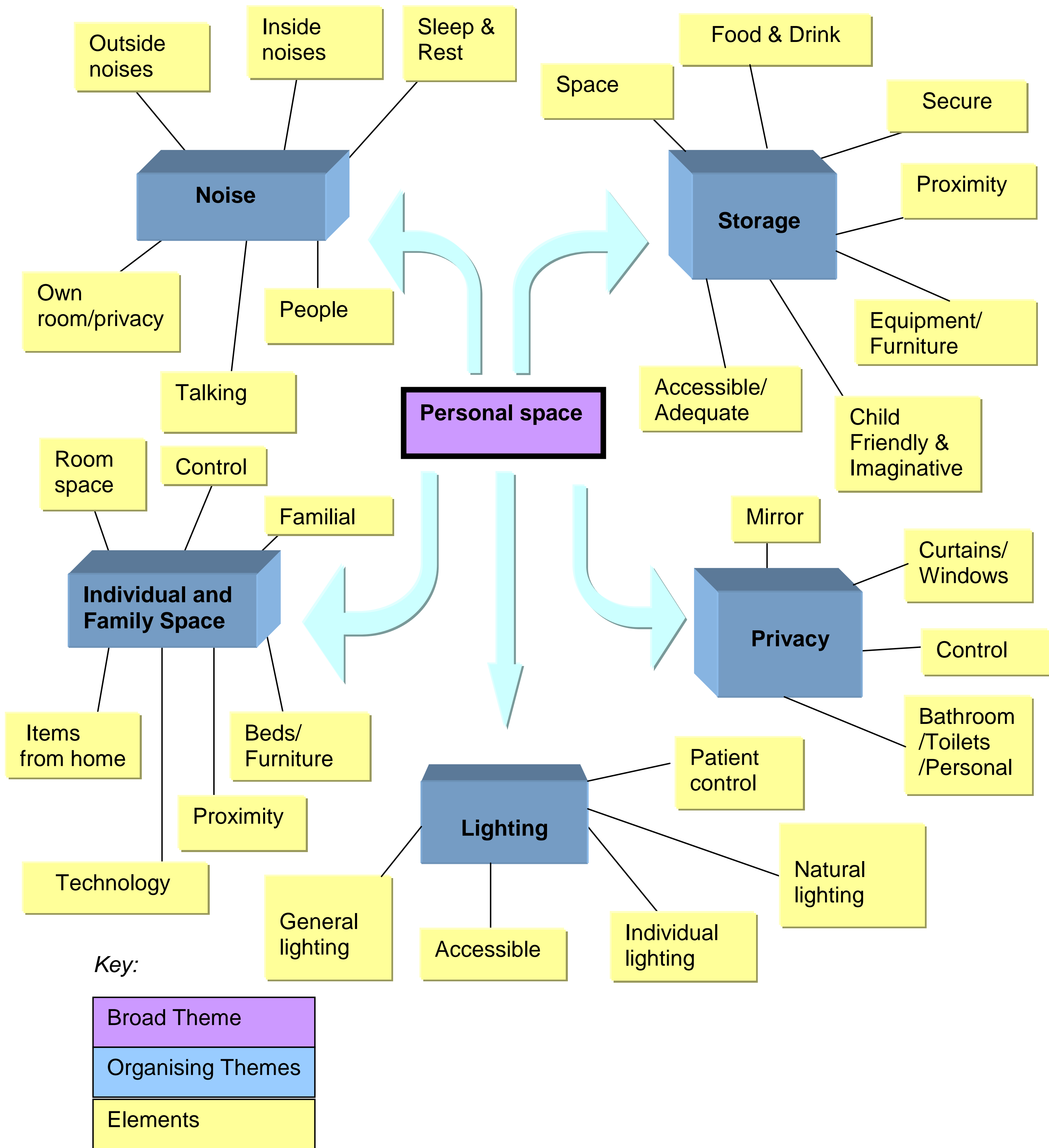
2.3.2.3 *Movement*

A central feature to emerge from conversations with children, either while completing the questionnaire or during drawings/art work was *movement*; either fluid-like or restricted. The general concept to transpire was their need for an environment that supported seamless and smooth flowing movement throughout the hospital space (i.e. *fluidity of space*). Children also highlighted the need for "*open" spaces* which would allow for a diversity of movement opportunities, such as *jumping*, *running*, *somersaulting* and *dancing*. Additionally, children spoke about the necessity to be able to bring 'everything' to the bedside; especially in cases where they were restricted to a confined space because their movement away from the bedside was inhibited. Indeed, there were mixed views about having *choice/control* over activities with some children highlighting that they could decide what they wanted to do at their bedside, whereas other children stated that there was limited choice as a consequence of limited facilities at bedside. Thus, the need to be able to bring things to the bedside was reiterated. Additionally, while some children stated that they were given a choice to go to the playroom and/or school, often this *choice* was limited due to interventions and/or *restricted movement* when they were in isolation or *confined to bed*. For those with restrictions to movement through, the need for isolation or limitations on visitors (as was the case at the time of data collection due to the H1N1 virus), it is suggested that *computers* at the bedside would offer much potential for social connectivity both within the hospital and outside of the hospital, through a variety of *social media technologies* (i.e. *Information and communications technology*).

2.3.3 *Personal Space*

Personal space refers to each child's individual bed space and how this is constructed and controlled physically and socially. Children valued having their own personal and private space, alongside the presence of their family. The theme personal space consists of five organising themes; namely, *individual and family space*, *privacy*, *storage*, *noise*, and *light*. The key elements of these organising themes are visually represented in Figure 3 below.

Figure 3: Theme 3: Personal Space



2.3.3.1 *Individual and Family Space*

Within children's personal space they identified the need for space for their family (i.e. *familial*); with 62% of children identifying in the questionnaire that there was not enough room for their family and friends to visit and spend time with them. Children valued the closeness of their family and wanted *sleeping facilities* for their parents in *close proximity* to their bed. Almost all children recounted that at least one of their parents stayed with them during their hospital stay; either together with them in their hospital bed, on a mattress on the ground or in a fold up/camp bed next to their bed; as the following quotes illustrate.

> *"The doctor said only little kids are allowed to sleep on the big bed but my daddy and mammy have to sleep on the floor on a mattress (laughing)....and there's a little boy sleeping in his bed and his daddy was sleeping on a mattress like my mammy and daddy......I won't stay on my own....just stay with my mammy and daddy, not on my own" (Boy 5 years)*

> *"My ma sleeps with me and my da sleeps somewhere else" (Boy 5 years)*

A number of children stated that, they missed the fact that their parent could not sleep in the same bed as them (this would sometimes be the norm at home especially when they would be unwell) because the hospital bed was too small and would not allow for this. When asked for suggestions about what to recommend for the new hospital, a number of children stated that they would include *two-three beds* so that *both parents* could stay with them (also illustrated in some of the children's drawings, where they drew three beds). Interestingly, some children felt that if beds were included in the hospital rooms for parents, there may not be enough room for them to get out of their bed and there would be insufficient room for the nurses to work. Thus, children recognised the limited *room space* in the current hospital environments but they were perhaps unable to conceptualise beyond the immediate environmental contexts to design or actually contemplate what would be possible to include in a new and ideal hospital room. Regardless, children clearly highlighted the need for *more space and bigger rooms* to accommodate sleeping facilities for both their parents to stay. Taking cognisance of the need for efficient use of space, children offered some

suggestions for types of furniture that could be considered as sleeping facilities for their parents and as potential solutions to overcome space limitation. For example, the use of *adjustable beds* (e.g. fold up, pull in and out from underneath child's bed) which could be put away during the day and/or *adjustable chairs* (e.g. blow up, beach/deck) that could change to beds at night time. The important thing for the young children was that their parents were able to stay in *close proximity* to them regardless of the type of *sleeping facilities* that this would require (i.e. mattress on the ground, fold up bed, proper bed, or a chair that converts to a bed).

As displayed in Image 6 below, children also spoke about the need for parents to have personal space, for example, storage for their suitcases and things, décor/pictures appropriate for parents, and televisions specifically for parents (i.e. a separate television for each child and their parent).

Image 6: An Ideal Hospital Room Designed by Girl 5 years

Box 6: Outline of Child's Design (Image 6)

She designed her bed with a *pink duvet with flowers* and her *pillow* would be like a *butterfly or love hearts*. Her *wardrobe* was *triangular shaped* - this was for her clothes. She had a *dressing table* with a *shiny love heart* as a *mirror* (which was like what she had at home). She put a *TV near her bed* so she could sit in bed and watch it. There was a *window* and when she looked out she could see a *tree*. She used gold decorations to *decorate* the room and had *boxes to store all her toys* in. Her *mum's bed* was brown with a pink pillow and she had a *small dressing table for her mum* also. She also drew a *picture for her mum* with flowers. She also included a *window for her mum* to look out into the back garden. *Carpet* was decorated. She would have pink curtains and a *light beside her bed* in *shape of a flower* - same as what she had at *home*.

Children frequently made reference to *missing familiar things from home* such as their own bed, bedroom and cuddly toys. Some children *personalised their hospital bed* with objects and décor from home (i.e. their own soft bed covers and their favourite teddies and dolls). In addition, to their cuddly toys children spoke about missing many of the toys and activities they engaged in at home, such as reading books, colouring, watching/having their own TV, and cooking with mum. As a consequence, a lot of children spoke about *bringing in their own things from home*, most notably *technological equipment* which they could use in their own personal space. Examples include, portable DVD players and laptops (through which films could be viewed) and Nintendo DS and portable play stations (so that electronic games could be played). Some children personalised their bed space with *family photos* and others drew framed pictures to represent photographs of their family, home and pets when drawing their image of an ideal hospital room. The Nintendo DS was also highlighted as a valuable tool for viewing personal photographs.

What picture would you like on your wall?

A picture of my family...maybe I should draw it....maybe I'll just make a picture of me and my sister" (Girl 5 years)

The *television* (and also often stated to be a *DVD player* as well) held a prominent place within each child's personal space, as relayed by, *Boy 5 years "beside my bed is nice......because...my telly is always there".* However, some children spoke about the inability to choose what they wanted to watch, as they did not possess a remote control which meant that they had no *control* over

changing channels. The main reason for this was because the television was often positioned/mounted high up on the wall far beyond the young child's reach. Children preferred the television to be positioned low down right in front of their bed so that they could see and a table next to their bed with remote controls on it so that they could change channels. Other children who had a remote control highlighted the benefit of being able to change the channels and decide on what they wanted to watch (e.g. Nickelodeon, Disney channel). Another child demonstrated a *remote control* she had to operate her *bed*. Having this remote, enabled her to decide when she wanted to sit up and when she wanted to lie down (i.e. enhanced *control*).

Image 7: Design of Hospital Bedroom by Girl 5 years

Box 7: Outline of Child's Design (Image 7)

In the drawing illustrated above, the girl had a *blue floor* in her room. She had an *orange* coloured *wardrobe* for her clothes and next to this a set of *shelves*. On the bottom shelf was an orange box for her paints, crayons and colours; here she would be able to reach them *"so you can get them when you need them".* On the second shelf were her books all stacked together and facing outwards so she could see the titles. On the third/top shelf there was a plant and a radio (up high in case the baby touches it she said) and also a box for her CDs; placed here so that they would not get damaged. Next to the shelves and above her bed was a framed picture of her sister. Next to this was a window from which she could see a tree and plants. She designed her bed, stating she needed *"a bed or I can't sleep (laughter)"* with a *flower pillow* and flower bedcovers and next to her bed was a bed for her sister *"my sister's bed" with a yellow pillow.* Finally, next to both beds was a chair with a comfy cushion. She also included a television in her room; represented by the black square with the green leaf on the front of it.

2.3.3.2 *Privacy*

Privacy emerged within the context of children speaking about, or drawing, access to their own *bathroom/toilet* in their own room and/or having a separate bathroom for boys and girls as opposed to having unisex bathrooms, as the quote below demonstrates.

> *"Maybe there should be boy and girl room [bathroom]..... think we have to put need put girl one here and a boy one here and girl one here ... so if there no bathroom in playroom then have to go rushing down to the room to go to the bathroom." (Girl 5 years)*

Children showed a preference for having *mirrors*, either in their room or in an adjoining bathroom, so that they could see their face when washing it or their hair when combing it. Children talked about or drew *curtains* around their bed and highlighted that they liked the curtains pulled around to get dressed; although some children did highlight that often the curtains did not go the whole way around leaving gaps. Some children did not include any *windows* in their room or covered windows included with large curtains.

Some of the children felt that the degree of *privacy* and *control* they had over their environment was *dependent on the type of room* they were resident in. For instance, most children believed that they would have more *control* over their

own environment if they were resident in a single room. For example, they would be able decide what programmes to watch on the television, what time to go to bed at and when to turn the lights out. Conversely, if they were in a mixed room, with only one television per room to cater for all children often of various ages, they would often be subjected to watch programmes they did not want to and/or were too babyish for their interests. To overcome this difficulty, children suggested that there should be one television for each bed space; even if this was just a small television in front of them on their bed table.

2.3.3.3 *Storage*

Having *adequate*, *child friendly* and *imaginative* storage was a strong theme to emerge from children's drawings/art work and their responses from the questionnaire; with 56% of children stating that there was not enough room for them to store all their stuff around their bed. Children highlighted that the only storage they really had in the current hospital environment was a bedside locker; with children mentioning that their things were often left on their bed, bed table, or underneath the bed on the ground. Perhaps, this *storage space* was adequate for children who were admitted acutely and only staying for short periods of time. However, for children who attended hospital frequently and for longer stays it was deemed inadequate for them, and their parents, to store all their stuff, such as clothing, food, footwear, toys, and books etc. Interestingly, children spoke about *adaptable* and *moveable* storage systems to cater for the needs of different children *(i.e. accessible and proximal).* To be *child friendly,* children spoke about the need for storage systems to be child appropriate (e.g. toy boxes), at a height independently *accessible* to them (e.g. low down shelves) (as the quote below demonstrates) and to have an *imaginative design* (e.g. multi-colours and different shaped furniture).

> *"If you put it [box for paints/crayons] up there [top shelf] then how can you reach it" (Girl 5 years)*

Storage *equipment/furniture* that children suggested for the new hospital environment were *wardrobes* (to hang up clothes), open *space for suitcase*, *shelves* (for displaying books/toys), *toy boxes* to store toys, *boxes* for CDs, sets of *drawers*, *dressing tables*, *presses* for *food* storage and a *fridge for drinks/food* storage. The need for *secure* storage was also mentioned especially for things brought in from home

Image 8: Design of Ideal Hospital Room by Girl 8 years

Box 8: Outline of Child's Design (Image 8)

She drew a *TV 'up high so everyone could see it';* it was silver with black buttons and had a *DVD player so can watch films*. She designed her bed like it currently was with a white pillow and a blue blanket; but then stated that maybe they could have all *different colours* and children could choose which colour they would like (i.e. blankets/sheets) and also *'nice soft pillows'*. She put a gold pattern/decoration on the blue blanket and used a flower for her pillow so that it looked like a *flower bed*. At the back of her bed were bars - the back rest that was pulled out to enable her to sit up. Next to her bed she drew an *orange coloured soft chair for her mum* which could be *changed into a bed*. She went on to say that her mum slept on a camper bed beside her bed; but she decided to draw a bed for her mum as well with *nice fabric* and a *flower pillow* as well. She drew some things that she would like to have to do in her room; a *bouncy ball* and a *mini trampoline* with a pole to hold onto. When

asked about what she would decorate her room like, first she stated *wallpaper* with cars but then she decided *posters on the walls* and used the cars to illustrate this. She drew a *wardrobe* where she could hang her clothes; it would have nice white handles and a *mirror* on the outside so she could look at herself when doing her hair. She put a *bathroom in her room* so she would not have to walk to it and in the bathroom there would be a *mirror* so she could see herself when she washed her face. She drew some *windows* and when asked what she could see she stated she couldn't see anything because *'they keep the curtains closed'*. If the curtains were open she stated it would be *nice to see a garden* and she put a *tree* in the window to illustrate this. At the top of the page she put some white balls to illustrate *'lights like a chandelier'* and also a design/ *decorations hanging down*.

2.3.3.4 *Noise*

Noise was an environmental aspect that many children mentioned as impacting on their personal space and something which annoyed them. For instance, from the questionnaire data, 62% of children stated that there was not a quiet place to go to sleep/rest. Mostly children spoke about noise levels at night time which disrupted their *sleep and rest* time. Children relayed many examples of different *inside and outside noises* which they found annoying, for example, babies crying, doctors and nurses working even throughout the night, people [doctors and nurses] *talking* and shouting, lots of *people* moving around, lots of children in the room, *people* coming back from theatre, the television, *people* snoring (i.e. parents sleeping on floor), noise from traffic outside (i.e. cars, trains), beeping machines, dripping tap, woken to get medicine - self and others, children playing (e.g. play station), children in pain, sick, and sad. One boy relayed:

> *"And outside there was an alarm in the dark like...someone set off an alarm out there....yeah I couldn't sleep my ears were so stiff, I couldn't even get awake with I" (Boy 5 years)*

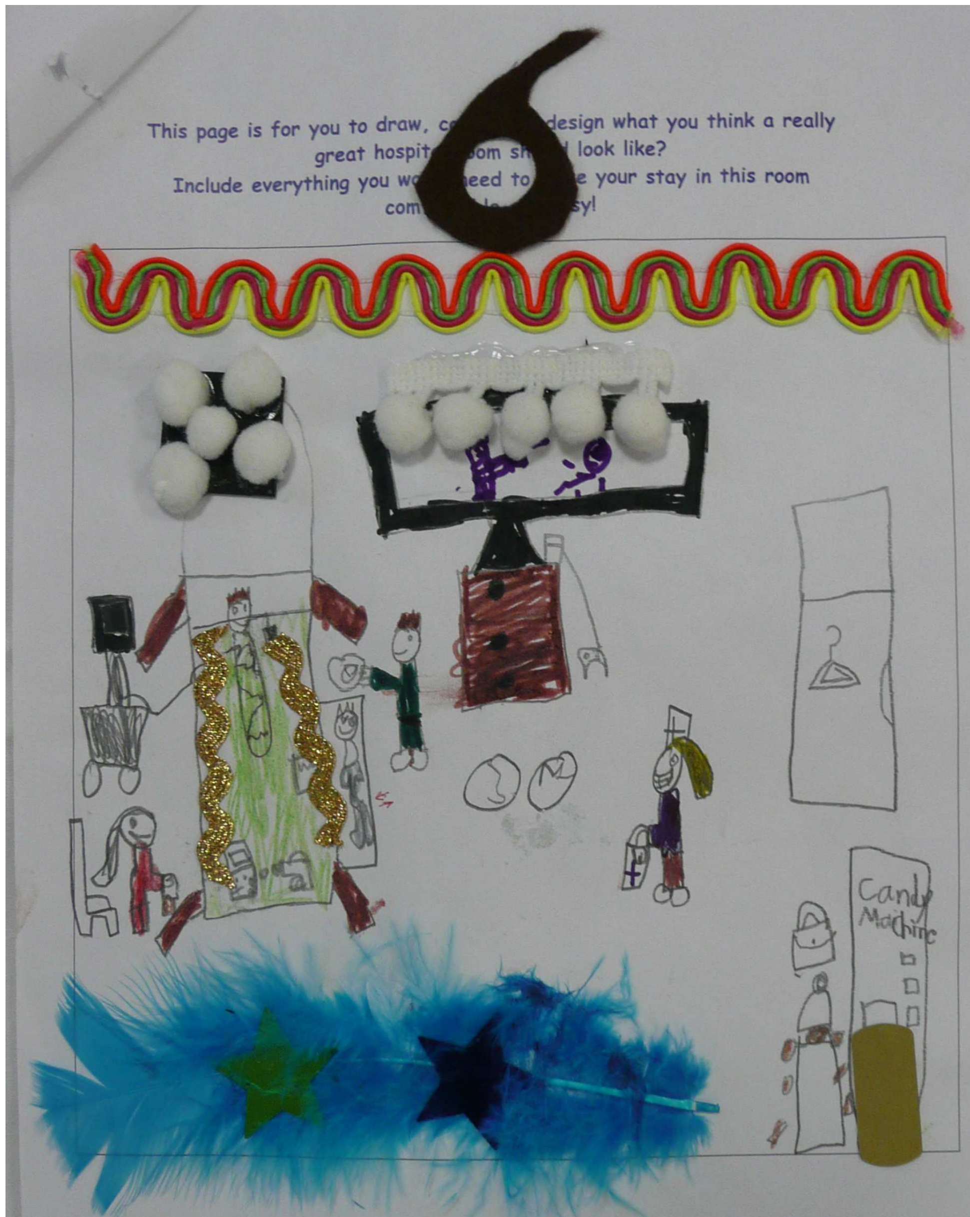
When asked for ideas about what could be done to try to minimise this noise and make it better, children stated having *less children in rooms* and having their *own room*. Some children believed that it would be good to have a single room, especially at night time, perceiving that there would be less noise in a single room (i.e. quietness/noise depends on type of room). Indeed, many of the children who relayed that the hospital environment was a quiet place were occupants of *single rooms*. However, it was acknowledged by the children that

during the day, being in a single room could be counterproductive as they might get bored and they would not be able to make friends like they would if they were in a mixed room with other children (Refer to socialisation theme).

2.3.3.5 *Lighting*

Lighting was another sub-theme to emerge from children as they spoke about and/or drew their own personal spaces within the hospital. Children mentioned the brightness of the *general lighting* and stated that the lights always seemed to be on. For example, some children spoke about lights been on in the room at night time, for doctors and nurses to work and also lights shining into their room from the nurses station nearby and/or corridor. Curtains were ineffective in blocking this light out. This meant that for children who liked it pitch black to sleep found sleeping difficult. Yet, another child relayed that if it was too dark you *"would need a flashlight to see".* One boy with a visual impairment stated that the general room lights were very bright for his eyes. In many of the children's drawings they drew *individual lighting* systems above their bed or *bedside lamps* that they would be able to *access light switches* and thus exercise some *control* over turning lights on and off. One child illustrated her *call bell* which enabled her *control the light* above her bed. As mentioned previously, many of the children drew windows in their drawings and spoke about the sun shining in through the window emphasising the need for *natural lighting*.

Image 9: Design of Ideal Hospital Room by Boy 8 years



Box 9: Outline of Child's Design (Image 9)

He was in bed drinking coke. He decorated his bed with *green bed clothes* and *gold decorations* at the side (*green and gold*). His *dad would sleep with him or next to him in the bed*. It would be a *mattress which could be pulled out from underneath his bed* so that it could be pushed in and out during the day and night. Next to his bed was the *BP machine* – he told me about the nurses coming to put it on his arm and it squeezed - he had it done lots last night and again this morning. He drew a *nurse* with a hat (when asked about the hat he stated that nurses in hospital didn't wear hats but he saw it on TV/in books). When asked what the *nurse was wearing he stated ordinary clothes/trousers* and he knew it was the nurse because of the hat she wore; the nurse was carrying a *bag with all her tools*. Next to

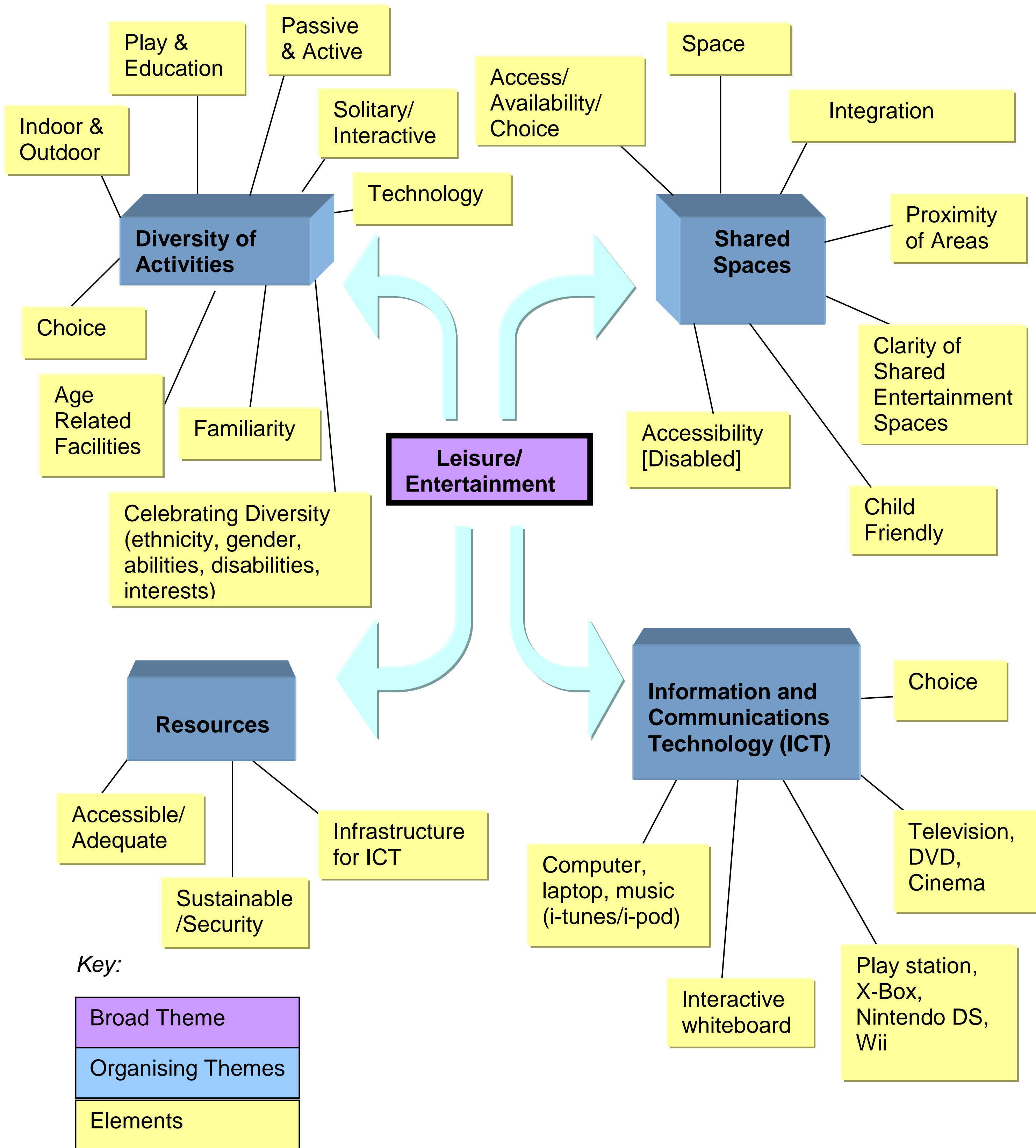
his bed he drew a servant bringing him *pizza* and later stated that this was a *male nurse*. The feather represents nice soft flooring.

At the far side of his bed was his *mum* in a red dress holding her bag; she was sitting on a *chair* next to his bed. He drew a *bed in the room for his mum to sleep on nearb*y. Above *mum's* bed was her *suitcase*. Next to this was a *candy machine with candy floss*. Above this initially he stated was a *fridge* for all his *juices* then later he changed it to be a *wardrobe* (illustrated with a hanger on it). On his bed were a *book* (his dad had read him stories from last night); a *water gun* and his *Nintendo DS*. In the middle of the room was a *large flat screen TV* on which he was watching James Bond and next to this was the *play station* and underneath it a *set of drawers* for storing all his stuff. Above the play station and above his bed were *different styles of lights*. When asked if he would have a window in his room he stated that no the light would come from the TV. In front of the *TV/play station* he drew two *bean bags* where his *siblings* would sit when they visited. Finally, at the top of the page he cut and pasted some colourful decorations.

2.3.4 *Leisure/Entertainment*

Leisure/entertainment was one of the strongest themes to emerge and one of the most valued aspects of the hospital environment for the young child participants. Leisure and entertainment refers to all the different activities that were available to, or young children would like to have available to them during a stay in hospital. The provision of such activities promotes a more positive experience of hospital particularly for those whose conditions necessitate regular hospital stays. It is important to note that any such activities need to be addressed at operational level within the hospital as most will need resources to ensure sustainability of activities. Leisure/entertainment includes four organising themes; *diversity of activities*, *shared spaces*, *resources* and *information and communications technology (ICT)*. The key elements of these organising themes are visually represented in Figure 4 below.

Figure 4: Theme 4: Leisure/Entertainment



2.3.4.1 *Diversity of Activities*

Children reported enjoying a mixture of different activities during their hospital stay. This gave them both a sense of *control* as they could choose their preferred activity and alleviate their boredom. However, children recognised that the current range of activities could be broadened significantly to cater for their different needs and likes/dislikes. The activities the children mentioned could be categorised as follows; *active/physical* activities (e.g. bikes to move around on, snooker/football table, trampolines); *passive/solitary/quiet* activities (e.g. reading books, cinema to watch films/movies, listening to music); *imaginative/creative* activities (e.g. drawing, colouring, painting, arts and crafts); *shared/interactive games* such as board games (e.g. monopoly, guess who, connect 4); *educational* activities (e.g. activity worksheets, puzzles, school) and *technological activities* such as electronic games (e.g. play station, Nintendo DS, television/DVD, computers, i-Pod). The activities could also be categorised into *indoor and outdoor* activities. Outdoor activities (i.e. *hopscotch, a slide, swing, bouncy ball, climbing frame* and *merry-go-round)* were mentioned previously under the theme physical environment (refer to the organising theme - *bringing the outside in*). In the image 10 below, one girl drew her favourite room in the hospital; the ‘gym’ (i.e. the physiotherapy department).

Image 10: One Girl's (6 years) favourite place in the hospital: the "Gym"

Box 10: Outline of Child's Design (Image 10)

She decided to draw a <u>gym</u> (i.e. the physio dept). She wanted to draw this room because it was her favourite room in the hospital; it was better than the play room because it was *bigger*. First she drew a Christmas tree (i.e. time of year of data collection); then she drew two *trampolines* - one big and one small one - on the big one the physio (name) and she were *jumping*. The small trampoline had a bar that she could hold onto. She then showed me a photograph of herself jumping on the trampoline and she was all dressed up in costume. Next she drew what she called an *Air Walker* and illustrated this to me in how she used it through her leg movements up and down showing me how she walked on air! She then drew a *walker with two bars with an arrow to show how she walked between the bars.* Finally she drew and spoke about a *magnetic game on the wall* which she stated that you throw things at it and if you hit the target and they stick you get points.

The availability of a variety of activities helped to cater for the diverse recreational *interests* of children of all ages and genders. It offered alternative *choices* to accommodate children's different abilities and provided children with a *mix of activities,* which they liked; because they would get bored with just one type of activity. Although children did recognise the need to have facilities that all children would be interested in; for example when designing activities for the playground outdoors one 5 year old girl stated:

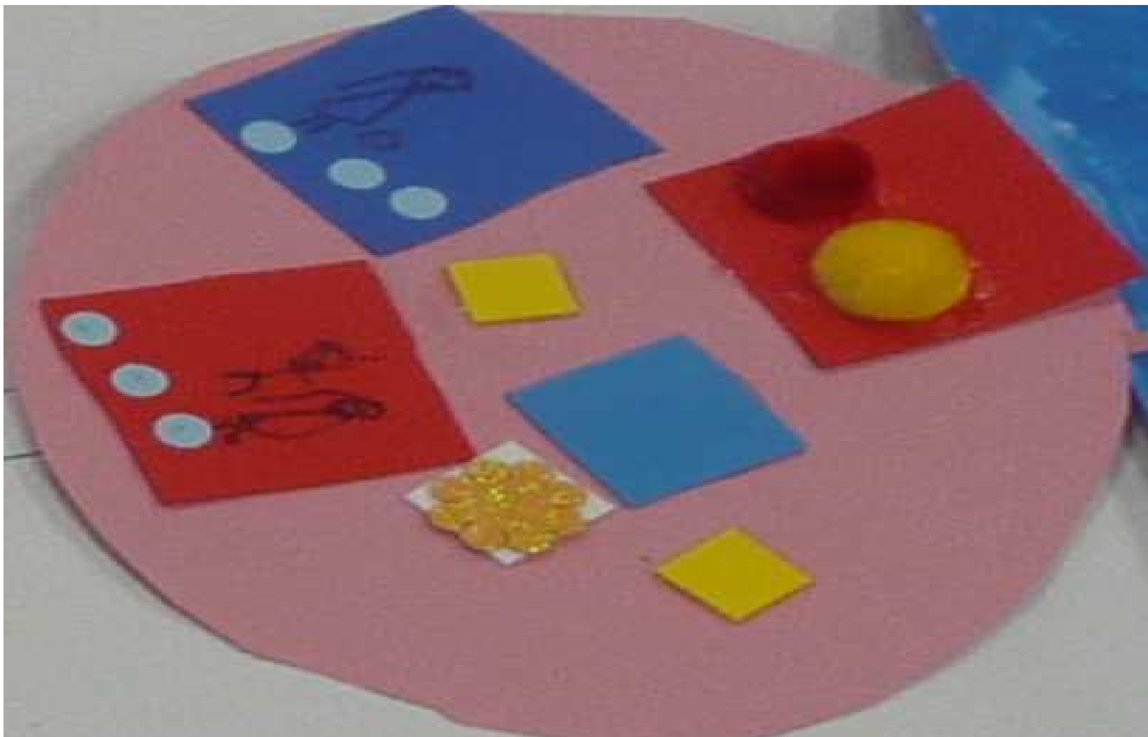
> *"We need to make something that everyone wants to do.....play on the see saw" (Girl 5 years)*

Although requiring much further investigation, the need for diversity of activities was also important to ensure that the needs of children with various *disabilities* were taken into account, for example *multi-sensory* (touch, audio) toys, books, games and activities. Children also commented on the *accessibility* of activities/facilities and the need for similar toys/games to those which they had at home; thus enhancing *familiarity*.

Age appropriate and *gender inclusive* activities were deemed important to the young children. This was illustrated when some children spoke about the existence of *babyish toys* in the playroom and stated that more stuff was needed for *children* (i.e. referring to children their age 5-8 years). Some of the slightly older aged children (i.e. 7-8 years) felt that they were at an *'in-between age'*; because they identified that while there were many toys/activities available in the playroom these were mostly suited to younger aged children and there was also another room especially for teenagers; but no specific space for children in the middle years. In relation to *gender inclusiveness*, the young children recognised different gender preference for different toys/activities. For example, in one of the art workshops, children designed a second small playroom which was to contain all the technological activities (i.e. X-box, computer, TV etc) (see image 11 below). During the construction of this leisure space the children conversed about

having different equipment for boys and girls. For example, the children suggested having one x-box, computer and television for girls and separate ones for boys. When asked why children perceived this to be necessary they stated; *"because girls play different things to boys on computer....and boys might delete the games....and boys and girls watch different things on TV....for instance boys might watch football whereas girls would prefer to watch Barbie" (Girl 6 years).*

Image 11: Second Playroom: Technology Room



Box 11: Outline of Children's Design (Image 11)

During one of the art workshops, the children designed *two playrooms*. The first playroom led into a smaller second playroom, which could be termed the *technology room* because it contained the *TVs, X-boxes and computers*. This room is illustrated in image 11 above. The red and blue squares with the drawing on them and the blue buttons represent two TVs; *one for boys and one for girls*. The two small yellow squares represent the *computers/x-boxes* for the girls and the larger blue square represents the computer/x-box for the boys. The red square in the background with the two soft 'cushions' (red and yellow) represent the *sofa*. The yellow flower on a white background represents a poster in the playroom of *"flowers and stuff"*.

2.3.4.2 *Shared Spaces*

From the conversations with the children and as illustrated in their drawings/art work, it was evident that children believed that leisure spaces should not be regarded as separate segregated areas/rooms and/or rooms with restricted access. On the contrary, children believed that leisure activities should be *integrated* throughout the whole context/theme of the hospital environment. Their favourite room in the current hospital environment was the playroom and they wished that their beds could be in a room like the playroom where they would be "*surrounded by toys*" (i.e. *child friendly*). Toys were important in all areas of the hospital environment as the quotes below illustrate.

> *"I like going in here [playroom] to play with all the toys because the last time I was over at that table painting" (Boy 5 years)*

> *"'I'd like to put in...I like the bathroom because I like... in the bath because in the bath there's toys to play with and I like the bath..." (Boy 5years)*

> *"I like when I bring my toys into the doctor with me" (Boy 5 years)*

> *"Maybe if I wasn't allowed to go to the playroom maybe I might pull over my table and play with my books" (Girl 7 years)*

This integration of leisure areas and activities would take cognisance of children who, for whatever reason, would not be able to attend centralised play rooms if they were distinct from the caring/curing areas (i.e. restricted movement, confined to bed, in isolation). Additionally, leisure/entertainment *integration* would mean that leisure activities would be *readily available* at all times and not restricted to 'set' times when play/school areas were open (e.g. some children spoke about the school only being open until lunchtime for bigger children and they wanted to stay longer but were unable to do so). Interestingly, in the children who participated 54% were not aware of the hospital school. However, this finding needs to be placed in context - a lot of these children were unable to leave the ward to attend school or had short hospital stays. Thus, there is a need to ensure that key activities for children are central to each room; *readily available* and *freely/independently accessible*.

Other children with experience of attending a number of the children's hospitals spoke about their preference for play rooms that were *big in size* and which had *large open spaces*. They also highlighted the different benefits and limitations of having play areas based on the wards versus having a centralised play area away from each ward area for all children to attend. Some of the children commented that it was good to have a playroom near their bedroom. Other children could actually see the playroom from their bedroom and other children drew playrooms right next to their bedrooms when designing the hospital in the art workshops. Lack of proximity was also relayed by one child stating that it would have been better if the playroom was on the ward as opposed to having to walk up the stairs to go it. Additionally, children highlighted that if there were play areas on the ward these areas were generally always open for children to go to. This appeared to enhance children's control and choice about when they wanted to attend/go play (i.e. playroom on ward - close *proximity* - always *open and accessible*). Whereas, for centralised play areas, located away from each individual ward, children's choice to attend, play, and source toys/games, was restricted because it was determined by the structured opening times of the central play area (i.e. central play room – far away from the ward - *not always open and accessible*). Children relayed that when these central play areas were closed they could not independently *access* leisure facilities/activities because they were locked away. Children felt that play areas should be open all the time when children are awake. Another limitation identified by children was the need to be able to return to the ward from the centralised play areas/school to have interventions; thus, highlighting the need to consider *ease of movement* and *proximity* between ward and play/school areas. Therefore, leisure spaces and activities need to be integrated into the hospital and not an added extra aspect with restricted opening times.

Further, children talked about the importance of *making friends* and this was an extremely important aspect of attending central play rooms.

> *"I'd play with my friends sometimes in the play room" (Boy 5 years)*

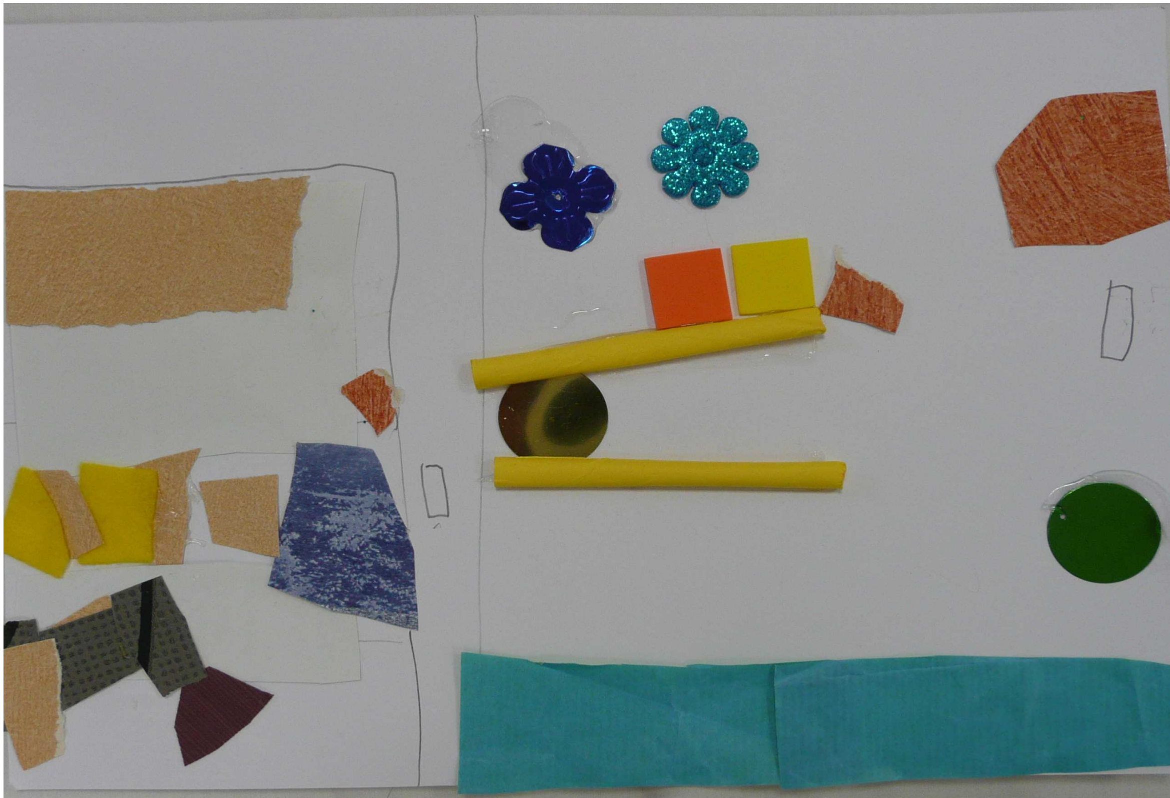
Therefore, the value of having centralised areas for children to congregate is a necessity for socialising, in addition to the integration of leisure activities throughout the whole context of the hospital to ensure that activities/facilities are readily available and independently accessible for children outside set opening and closing times; in addition to catering for children who cannot access central play areas. Refer to theme 5: enhancing socialisation.

However, while recognising the need for integrated and centralised spaces and activities to enhance socialisation it is also important to consider children's need for space for quietness/stillness/relaxation. This was illustrated in children's art work through the design of cushioned reading areas/corners, outdoor seats/grassy areas for sitting/lying down etc; as the following quote demonstrates.

> *"That's [carpet] where I lie down to read my books because I have important books to read" (Boy 5 years)*

Finally, children highlighted the need for *clarity of shared entertainment spaces*. For example, some children suggested that there should be segregated areas (or two or more playrooms) for babies and younger aged children (i.e. toddlers) and for older children (i.e. referring to themselves (5-8 years)). Similarly, other children mentioned the possibility of having separate play areas to accommodate both genders because they felt that boys and girls would have different activity interests and consequently would need gender specific spaces to engage in these activities (see organising theme *diversity of activities*). However, the need for mixed gender activities and spaces was also highlighted.

Image 12: Proximity of Bed Room and Playroom: Design by Boy 6 years



Box 12: Outline of Child's Design (Image 12)

Left hand side of the picture - He drew his bed in the middle of his room with loads of pillows on the floor. He also included a bed for his mum and had two TVs in his room (these were the flower designs); one TV for mum and one for himself. Leading from his room was a door to the playroom (right hand side of the picture). In the playroom he put bouncy balls, a football and boxes with lots of toys. The playroom had a blue floor. The playroom also had a window and looking out the window he could see trees, houses, train and *"all me buddies"*. He included some *shelves for all his toys* and a *play station* in the playroom which was right next to his bedroom.

2.3.4.3 *Information and Communications Technology*

Given the substantial increase in technologies such as game consoles etc, it is not surprising that a strong feature to emerge across the children's data sets was the use of technology, whether this be in the playroom, school, and/or at their bedside. Activities/equipment children frequently referred to were *television* (which held a prominent place in their bedroom, as mentioned previously under

personal space), *DVD player* (attached to the television or portable) to watch films, a *cinema* to watch movies, console game systems such as *play-station* (whether stationary or portable) and *X-box*, the *Nintendo DS* for playing games and taking pictures, *computer/laptop* for playing games and watching films on and music systems such as the *i-Pod* for listening to music. Children also mentioned having an electronic interactive whiteboard in the playroom or ward areas (children were familiar with these from using them in school). While some of these facilities were available in certain areas of the hospital, children mostly talked about bringing in their own equipment from home. The *portability* of these facilities was important to have them available at the bedside as well as in deigned areas (e.g. see image 10 the technology room). Other things that the children did not have access to, but suggested would be of benefit, were the *internet* (for accessing interactive websites) and interactive games such as the *Wii;* thereby highlighting the need for engagement and sociability (refer to broad theme - socialisation).

2.3.4.4 *Resources*

Emerging as a small sub-theme but worth noting was the issue of resources. A number of children identified some challenges in relation to leisure and entertainment resources, nominally related to *adequate* facilities, maintenance, *sustainability* and *security* of facilities and equipment. Children spoke about the *availability* of limited toys and games for the amount of children that were in hospital. When reiterating the need for more books, not only in her bedroom but also in the playroom for all of the children, one girl stated:

> *"One book for one person, one book for one person and one book for one person...so need more books" (Girl 5 years)*

Children also mentioned that often pieces of games and equipment were missing, broken, lost and/or stolen.

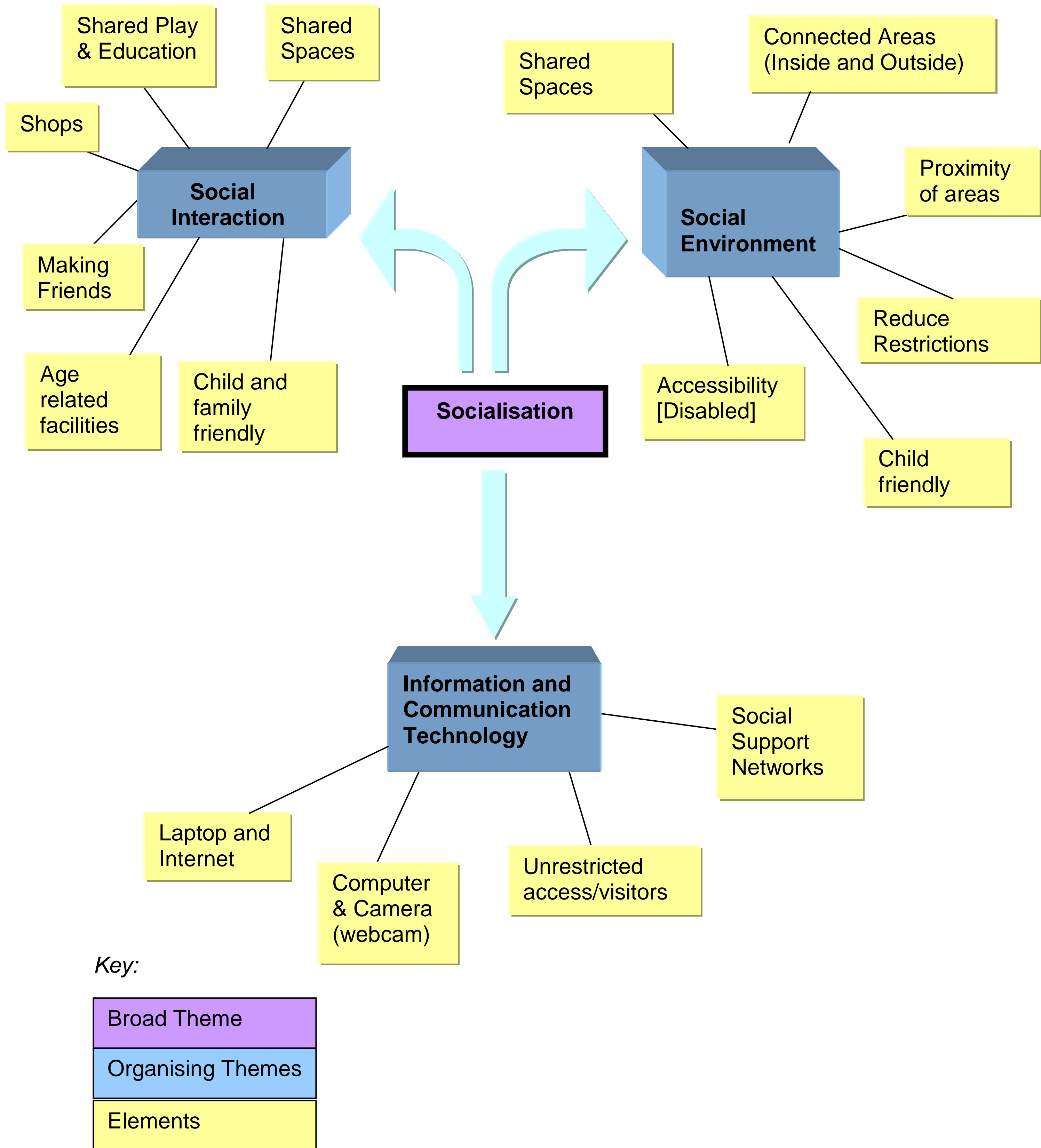
> *"The telly was broke last night....we had to get our daddies to fix the telly" (Boy 5 years)*

Additionally, the potential for *information and communications technology* (ICT) has impacted on many aspects of this report. The opportunities cross all prominent themes from *physical environment*, where ambient technology can be used to enhance the physical space; to *access* where communications technology can support those with limitations on movement, whilst also offering potential to broaden the spectrum on *socialisation* within the hospital, at home, at school and with the outside world. There are lots of online resources which can provide a variety of creative *activities and entertainment* which this generation of 'tech savvy' children almost expect (refer to organising theme *information and communications technology)*. An appropriate balance between providing this access within the hospital environment needs to be addressed with all key stakeholders. Network *infrastructure* to support these technologies need to be considered at the design phase. Also hugely important is the *operational resources* that the use of technology necessitates.

2.3.5 *Socialisation*

Closely related to the leisure/entertainment theme was socialisation. This fifth theme, socialisation refers to the social environment of the hospital as experienced by young children. It encompasses the social environment itself and how this is actually created within the context of the hospital setting, in addition to, the opportunities for social interaction and how sociability can be enhanced within the context of a constrained hospital environment. Socialisation has three organising themes; *social interaction*, *social environment* and *information and communications technology (ICT).* The key elements of these organising themes are visually represented in Figure 5 below. It should be noted that a number of the elements have been alluded to in previous themes and therefore will not be referred to again.

Figure 5: Theme 5: Socialisation



2.3.5.1 *Social Interaction*

Children reported valuing the opportunity to socialise/interact with other children/fellow patients. The *relational/shared spaces* children talked about were mainly the *playroom* and hospital *school* (i.e. *shared play and education*). Interestingly, in one of the art workshops children spoke about *"a sharing playroom"; "it's a playroom for everyone".* Children's favourite place, the playroom, was viewed as a shared social space. Here, they *met other children*, *made friends* and there were *'loads of toys'* and *'lots of things to do'.* Additionally, in designing their hospital garden and playground, it was clear that children saw this as a potential environment for social connection. For example, when 5 year old girl was designing the "merry-go-round" she stated:

> *"they [seats] have to be close together so we can sit beside each other....and lots of children fit in" (Girl 5 years)*

The school room was also viewed as a space for interacting with other children and making friends. It was seen as an interactive environment, open to many possibilities, for example one girl suggested that the *school should have puppets at the weekend*[3]*. Making friends* was one of the elements that made the hospital feel like a nice and friendly place.

However, some children mentioned having *"rules for the playroom",* like they would have if they were in school. For example, "*no jumping around"* and "*don't kick people" (Girl 6 years).* Children stated that these rules should be visually displayed for the children, because they might not be able to read; but also verbally relayed to the children, because there might be some children who do not have glasses so they would not be able to see. In their art work children included furnishings that would offer opportunities for interaction, such as seating

[3] Indeed, a recent project completed in 4 hospitals across the country was the puppet portal project where children were invited to make puppets, play, perform and tell stories with artists-in-resident. Multi-media technologies were used to enable children to share their creations with children in other hospitals, thus creating an interactive social network (Helium, in conjunction with the Centre for Health and Informatics, Trinity College Dublin).

spaces (e.g. sofas within hospital environment and seating/benches outside in garden). As mentioned previously (see leisure/entertainment theme), children highlighted the need for *child friendly, age related facilities and spaces*, where they would be able to engage interactively with children their own age. Also, the need for family friendly spaces for social interaction was deemed important; both in terms of family space within their bedroom (refer to the broad theme personal space), but also having the opportunity to move around and go for walks with parents to the shop and/or outdoor/garden area - i.e. away from the confines of the bed space/ward.

2.3.5.2 *Social Environment*

Social environment refers to having accessible and sufficient *'shared' space* for children to meet together; whether this is face-to-face or electronically created through the use of technology. For example, in addition to having shared playrooms and a school, children designed a *cinema* in one of the art workshops (see image 13 below). According to the children, this cinema space would be a relaxing and entertaining *child friendly* space where they could go to watch movies (e.g. Madagascar Animal DVD, Monster v Aliens and Fantastic Mr Fox), but it could also be an interactive energetic *social place* for music, song and dance[4].

[4] This stimulates thinking about the area of arts and health and how this can be developed. For example, **Helium**, is a new multi-disciplinary performing arts in health company for children, operating nationwide.

Image 13: Cinema

Box 13: Outline of Children's Design (Image 13)
In the image 13 above, the children decided to include a cinema in their hospital design. The black background was chosen for this room by the children because it needed to be a dark room. The white shape at the top of the image is the curtain for the cinema which pulls across when the movie begins and closes when it ends. The picture of the duck and the pink star are used to represent the actual movie itself. The silver squares represent the seats where all the children could sit. The blue cutting with the yellow dot (handle) is the door.

Other things, as previously alluded to, which children valued were the *proximity* (i.e. end of the ward, just next door, could see it from their room) and *accessibility* (i.e. *reduced restrictions*) of social spaces. Refer to theme leisure/entertainment. The need for diverse activities to be made available at the bedside and not just in isolated/developed play areas was reiterated by many children, because they often stated that other than the things/activities/equipment they brought in with them, there were limited activities available at the bedside for them to do; apart from watch television.

Furthermore, as a consequence of restricted visiting, children spoke about missing people from home when in hospital, most notably their parents (if one or more parent was unable to stay), their siblings, grandparents and other distant relations (e.g. uncle, aunt). Some of the children also relayed that family members were physically unable to visit them when in hospital because of the distance to travel to the hospital. However, mostly children referred to visiting restrictions, stating that only one to two visitors were allowed at any one time due to space restrictions. One child gave an example of limited space when his uncle and grandparent visited; stating that his grandparent had to sit on his bed and his uncle had to stand. In addition to limited space, children relayed that visiting was restricted due to infection control reasons (H1N1).

In addition to missing family and relations, children also spoke about missing their school teacher and their school friends. The majority of children spoke about missing their friends because they were not allowed to visit (with 68% of children stating that they could not keep in touch with their friends). Some children felt that this could depend on the type of room they were in, because there was a perception that if children were in single rooms then maybe their friends would be able to visit. A number of children stated that they were unable to keep in contact with, or access, their friends from home when in hospital because they had no way to call (i.e. telephone) them. Therefore, children could not physically interact or verbally communicate with their friends when in hospital. Very few children spoke about having their own mobile phones. One child stated that if she had a 'real mobile' phone then she would be able to keep in contact with her friends, whereas another child, who had her own mobile phone, stated that there was restricted use on mobiles in the hospital and it was supposed to be switched to silent mode. Other children stated that they were able to keep in touch with friends at home through their parent's phone or through parent-parent contact, who would then update friends on their progress.

Thus, there is the need to develop some interactive communication network between children who are confined to bed and the more socially active areas within and outside the hospital environment (i.e. *connected areas inside and outside*). One possible solution would be the use of information and communications technology as mentioned by child participants.

2.3.5.3 *Information and Communications Technology (ICT)*

As mentioned throughout this report, the possibilities for social interaction are limited for children who were confined to their bed spaces and/or in isolated single rooms, thus unable to move to centralised or communal play areas and/or the school room. While one way to combat this, as a number of children mentioned, is when play staff and school teachers visit the ward areas to give the children things to do, this service is limited, because only one child can be visited at a time and children miss the social engagement that would take place with other children in communal play areas. Suggestions offered by the children about what things might be beneficial to help with keeping in touch with friends were the availability of a *laptop and internet* at the bedside, through which *interactive websites* (i.e. *social support networks*[5]) would enable them to keep in touch/interact with their friends, and having a *computer and a camera* (i.e. webcam) whereby they would be able to see their friends and also talk to them. Such support systems would allow for unrestricted access/visiting. However, to support any such developments in the future infrastructural requirements for such systems need to be ensured at the design phase.

[5] For example, Solas is an online a virtual community for children with cancer, developed by the Centre for Health Informatics, Trinity College Dublin which has addressed many of these issues for hospitalised children, providing a variety of tools for communication including (video link, sms, live chat and email) and entertainment resources through a secure Internet connection. Other similar initiatives include Starbright World - an American non profit making organisation - developed by the Starlight Foundation and another developments by the Centre for Health Informatics, Trinity College Dublin; Ait Eile (Another World) a social network to enable children in 13 different Irish hospitals to communicate via live chat and video conferencing.

3.0. RECOMMENDATIONS

This section outlines recommendations which emerged from the children's perspectives. Principal recommendations are presented under each of the five broad themes; "*physical environment"*, "*access"*, "*personal space",* "*leisure/entertainment"* and "*socialisation".*

3.1 Recommendations for Physical Environment

It is recommended that:

- ❑ A spacious environment is developed at all levels i.e. bedroom and ward areas, playroom and school areas, defined areas such as waiting rooms, and general access areas such as corridors etc. Should this not be possible, to allocate sufficient footage to physical space, it is recommended that careful thought is given to how a spacious perspective could be creatively enacted through the use of innovative methods, technology and the use of light; both natural and artificial.
- ❑ A singular overarching theme be considered for the overall design of the hospital interior; nominally, a naturalistic theme. This naturalistic design would be carried throughout the hospital (e.g. a beach trip, an encounter with the sea world, a garden, a nature walk, a visit to a bird sanctuary, a zoo tour etc) and meet the generic needs of children of all ages and gender. The proposal would be to create an interactive forum for children as they journey through the different areas of the hospital whereby they become an active participant as opposed to a passive observer of the hospital environment.
- ❑ The interior design of the hospital is reflective of the developing needs and interests of young children, in terms of, colour ranges, shapes, patterns and textures; thus creating an environment which is unstructured, flexible, creative and contemporary.

- Projection technology is used imaginatively to produce a creative use of space where the environment cannot be 'physically' and 'creatively' constructed.
- Consideration is given to the use of natural lighting, wherever possible; and in circumstances where this might not be possible that provision is made for the integration of a wide spectrum of adjustable artificial lighting.

3.2 Recommendations for Access

It is recommended that:

- Consideration is given to the development of a building that promotes ease of movement and that, the child, will view as a seamless room-less environment where he/she will be cared for within a child and family friendly context.
- Attention is given to potential mechanisms that could be employed to assist the child acquire familiarity with, and thus enhanced control of, the hospital environment quickly.
- Projection technology is employed for children in isolated and confined spaces to ensure that they can engage in all of the hospitals activities; such as the school and play room. Through projection technology, illusions of movement can be created, whereby key hospital spaces can be brought to children in isolation/confined spaces, so that they feel they have 'moved' from their bed space, as they engage with other spaces (i.e. play and school areas) through technology.
- Thoughtful consideration needs to be given to *defined areas* where children first encounter the hospital environment (e.g. welcoming child and family friendly environment with adequate age related play facilities/activities).

3.3 Recommendations for Personal Space

It is recommended that:

- The proposed single child rooms/wards be designed from a space perspective with the family unit in mind.
- The proposed child rooms/wards facilitate the child's need for personal space and privacy, as well as their need to interact and socialise with other children during their stay, and meet their need to engage in play in a meaningful way for them.
- The hospital environment is one that promotes the child's independence and locus of control.

3.4 Recommendations for the Leisure/Entertainment

It is recommended that:

- Age appropriate recreational facilities and spaces are readily available and independently accessible to children.
- The requirements and preferences of children of different ages/development are reflected upon in both the design and provision of play, recreational and relaxation spaces.
- A number of different spaces are created to accommodate for a diversity of activities. It is recommended that these spaces be located away from the confines of the bed space, yet still within close proximity to it.

3.5 Recommendations for the Socialisation

It is recommended that:

- Opportunities are available for children to socialise with other children/families.
- An interactive communication network is considered at the design stage, which will, firstly, facilitate children who are confined to bed to

stay connected with the more socially active areas within the hospital and secondly, enable children in hospital to remain in contact with their homes/community/friends/schools. This use of technology addresses issues in relation to restricted access and limitations on visitors, and supports social interaction, engagement and collaboration.

- Provision is made for the installation of a "*multi-purpose bedside system*" to provide access to entertainment (e.g. DVD, TV, Games) and communication (computer, internet, texting) opportunities.

3.6 Recommendations for Further Investigation

Owing to the limitations of child participant recruitment over a short period of time, the following needs to be considered for future/further investigation:

- The specific needs of chronically ill children
- The meaning of colour itself for children needs much more subtle and in-depth exploration
- The needs of children with different abilities/disabilities
- Accessible space (e.g. facilities for those who cannot access certain spaces) needs further investigation from children's perspective
- Children's perspectives of intervention/treatment spaces because this was a key feature that was noticeable by its absence within the data sets of this consultation project.
- Explore children's use of technology
- Look across all age groups i.e. children under and over 8 years for commonality / differences in experiences and preferences/needs
- Explore wider perspectives such as parents, health professionals, healthy children's views and wider contexts such as other child health units and community settings

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