Technology Experiences : What makes them Compelling? :

Alison Kidd, HPLabs, Bristol.

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1 Introduction

Consumers value technology products along 3 dimensions[1]:-

1. *Utility* – what they can use it for, e.g. using a cell phone to call their friends.

2. *Symbolism* – what it says about them, e.g. having the "right" cell phone says they are part of the cool crowd

3. *Experience* – how it engages their attention, e.g. personalising their ring tones is fun to do.

In the case of commodity products, most of the competition is along the latter two dimensions; the products tend to offer the same utility.

We are interested in exploring how HP might develop products that compete more effectively on the experiential dimension. There are two reasons for this:-

- Earlier research has shown that consumers consider HP products as 'useful' but 'dull' (see Kidd, 1997).

- Experiences are the new area of economic growth among consumers (Pine and Gilmore, 1999). There may be new opportunity for HP revenue and differentiation in this arena.

The motivation for the present study was to find out what characteristics of a *technology-mediated* experience make it compelling for people, i.e. why they remember it, tell their friends about it, pay money for it and come back for more of it on another occasion.

We hope that the findings might help us start to think differently about the experience offered by HP's consumer products.

We chose to focus the study at Explore-at-Bristol because they are highly successful at designing and selling technology experiences. Explore-at-Bristol describes itself as 'a 21st century science centre combining the best of hands-on activities with the very latest multi-media techniques'[2](see www.at-bristol.org.uk). Explore-at-Bristol includes 170 interactive exhibits within 4 themes:-

1. 'Your amazing brain' – explores the workings of the human brain.

2. 'Move it' – explores the ingenious human inventions that have harnessed the power of nature.

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[1] See Csikszentmikalyi and Rochberg-Halton, 1981; Belk, 1991; Kamptner, 1991; Richins, 1994; Kidd, 1997.

[2] Four months after opening (in December 2000), it was named 'Family Attraction of the Year' by The Good Britain Guide.

3. 'Curiosity zone' - investigates the forces of nature and experiments with light, sound and natural phenomena.

4. 'Get connected' – explores the digital revolution and allows you to try out innovative technologies and ideas.

A second motivation for the study was to gather more data on an HPLabs exhibit, ZapScan, which we have been running for the past 6 months as a separate experiment at Explore. ZapScan consists of a push-button flatbed scanner, a coin-operated inkjet printer and a wall-mounted digital picture frame. Coloured pens, paper and a desk are provided as part of the exhibit. Children draw a picture and then scan it in to see it appear on the wall-mounted picture frame[3]. Additionally, they can put £1 in the coin slot, enter their name on a keypad and the printer will automatically produce a glossy card with their painting on the front and their name on the back (see Reid, 2001 for more details).

Unlike a science centre, HP does not market "technology experiences" as an independent product; however, HP does already market at least one consumer product whose primary function might be described as experiential (the home PC).

2   Method

The study employed two methods of data collection: structured observation and discussion groups.

2.1   Structured observation

For pragmatic reasons, we selected 6 Explore-at-Bristol exhibits for observation:

FIGURE 1: Exhibits selected for observation study

1. Bernoulli Blower   2. Pulley Yourself   3. Digger

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[3] It is also displayed on the at-Bristol website for them to access later.

4. ZapScan   5. Virtual Volleyball   6. Round the world

1. **Bernoulli blower**: Visitors can experiment with an inflatable ball suspended over a moveable air stream.

2. **Pulley yourself**: Visitors can use a pulley system to pull themselves up in a cage; if they reach the top, a bell rings.

3. **Digger**: Visitors can operate a mechanical digger arm that picks up coloured balls.

4. **Zapscan**: Visitors can draw a picture, scan it and print out a card or display their picture on a screen.

5. **Virtual volleyball**: Visitors can see a virtual volleyball court and ball with images of themselves imposed on it; they can 'play' the ball via their own physical movements in relation to the images on the screen.

6. **Round the world**: Visitors can select a Web camera view from different spots around the world.

These 6 exhibits were selected as: representative of some of the most popular exhibits, offering a variety of experiences and relatively easy to observe inconspicuously.

We used informal pilot research to generate a set of 17 categories of behaviour commonly observed around these exhibits. These were used to construct a check sheet (see Figure 2):-

FIGURE 2: Observational Check sheet

Date		Time		Exhibit		
Male / Female	•Mark with * if strong emotion	Adults	Teens	Children	Frequent expressions/ any other behaviours	
1. Hanging around the exhibit						
2. Queuing to use the exhibit						
3. Looking at the exhibit (not touching it)						
4. Watching others using the exhibit						
5. Displaying positive emotion in response to someone else using the exhibit *						
6. Displaying negative emotion in response to someone else using the exhibit *						
7. Reading the information/instructions						
8. Directing someone else's attention onto the exhibit						
9. Talking to someone about the exhibit						
10. Physically interacting with the exhibit (controlled manner)						
11. Physically interacting with the exhibit (random manner)						
12. Physically interacting with the exhibit (unorthodox manner)						
13. Helping someone else operate the exhibit						
14. Restraining someone else from "playing" with the exhibit						
15. Using the exhibit to "play' with others						
16. Displaying positive emotion in response to the exhibit *						
17. Displaying negative emotion in response to the exhibit *						

The observations all took place on the same day[4]. 6 observers rotated, one at a time, around the 6 exhibits, observing each exhibit for 30 minutes. The 30 minute periods were broken into 5 minute intervals. Every 5 minutes, the observer was asked to record on a fresh check sheet any of the 17 behaviours which they saw occurring at that point in time. The check sheet also required them to record whether the behaviour observed was generated by an adult, teen or child and of which gender. A separate column was left open for the observers to note additional or surprising behaviours or make other notes.

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[4] A weekday at the start of the school holidays.

This technique proved very taxing for the observers but allowed us to produce some degree of consistency of observation across the exhibits and discouraged us from focussing on surprising and unusual behaviours at the expense of the more commonly occurring ones.

In most cases, the visitors paid very little (if any) attention to the observers as they quite easily mingled in the crowd.

The data from all 36 check sheets for each exhibit were collated and analysed.

2.2 Discussion Groups

Over a 2 day period, we recruited 78 Explore-at-Bristol visitors to attend a 15 minute discussion group and complete a questionnaire (see Appendix 1). The only reward offered was a cup of tea. We attempted (and believe we succeeded) in recruiting a good representative sample of age/family combinations and genders but only about 40% of people approached were happy to volunteer and we had a strong sense that 'professional' families were much more likely to be in this set.

We ran 9 discussion groups with an average of 9 people per group. The majority of groups consisted of a mix of parents (or grandparents) and children but two groups consisted of exclusively children visiting Explore as a party. We encouraged the groups to discuss the following 3 topics:-

- Which exhibits they most and least enjoyed and why,

- What they felt makes a good or bad exhibit,

- How they thought about the value of the Explore-at-Bristol experience and what kinds of things they compared its value with.

All the discussion groups were videotaped and these tapes were later transcribed and entered into a purpose-built linguistic database for analysis.

3 Observational Results

As there were very few teenagers present on the day of observation, we collapsed their data in with the children for the purpose of analysis.

Figure 3 shows the relative frequency of each recorded behaviour across the 6 exhibits.

FIGURE 3: Relative frequencies of recorded behaviours across all 6 exhibits
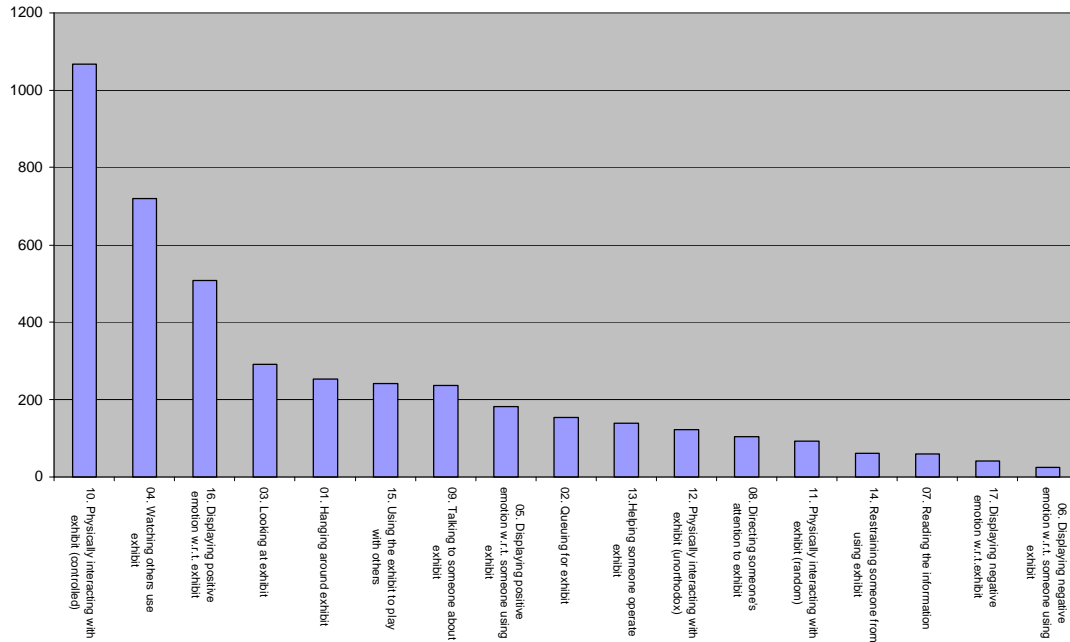
Not surprisingly, physical interaction[5] with the exhibit was the dominant behaviour, followed by watching others use the exhibit and displaying positive emotion (e.g. laughing or smiling) at the exhibit.

Figure 4 shows how these behaviours were distributed across different exhibits.

FIGURE 4 : Distribution of observed behaviours across the 6 exhibits

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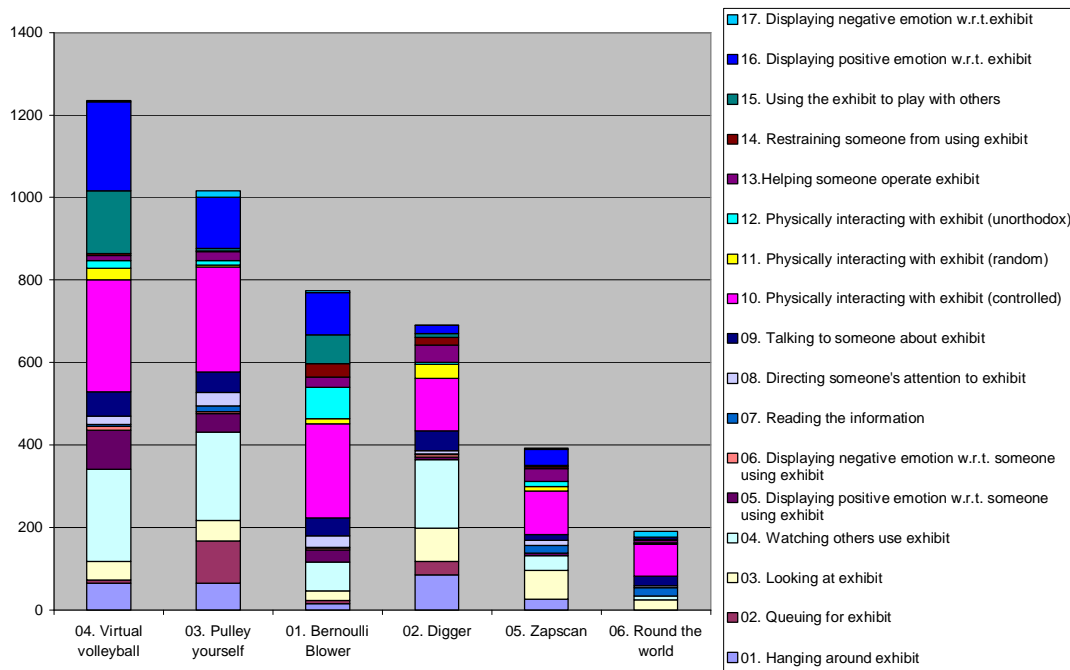
[5] In our observations, we distinguished between interacting with the exhibit in a 'controlled' manner (using the exhibit conventionally), in an 'unorthodox' manner (using the exhibit in an original but intentional way) and in a 'random' manner (e.g. hitting the exhibit in an uncontrolled way).

Physical interaction dominates across all exhibits but the other two top behaviours (watching and displaying positive emotion) are more unevenly distributed. Figure 5 shows, for example, considerable variati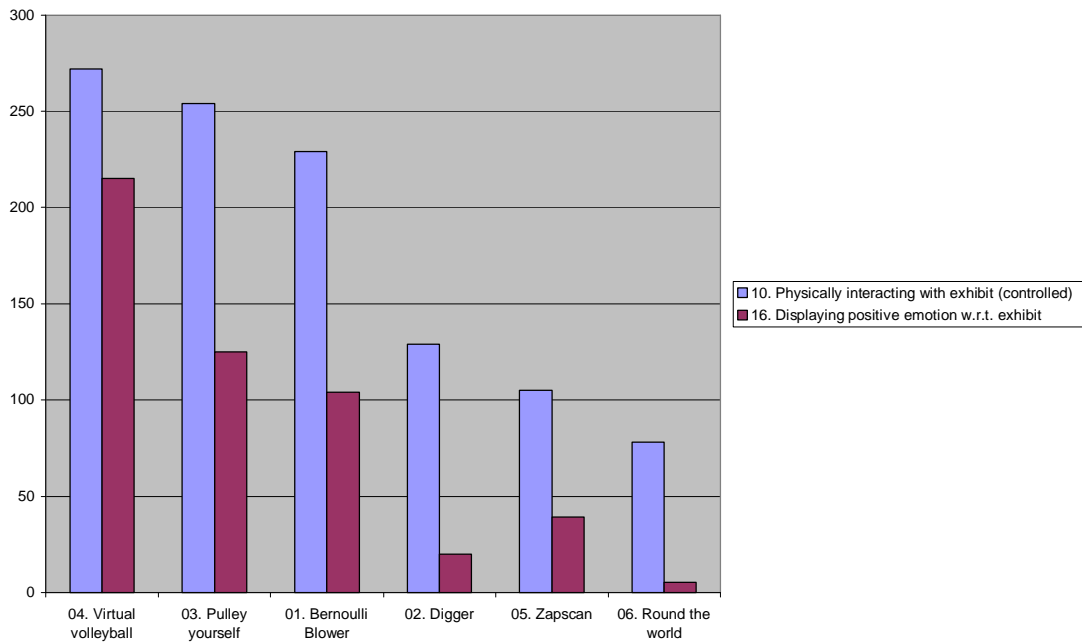on in the correlation between physical interaction and displaying positive emotion. The correlation is highest for the Virtual volleyball and lowest for the Digger.

FIGURE 5: Relation between the frequency of physical interaction and displaying positive emotion on any exhibit.

The observational data, combined with our own informal perceptions at the time, suggest that exhibits can engage you in two different ways: one is through a highly social element of sharing laughter and fun with your friends, the other is through your own self-absorbed application of skills to solve a problem or create an effect (in the case, for example, of drawing a picture for Zapscan).

Figure 6 shows the relative proportion of each behaviour contributed by each category of visitor.

FIGURE 6: The relative proportion of behaviours contributed by boys, girls, men and women
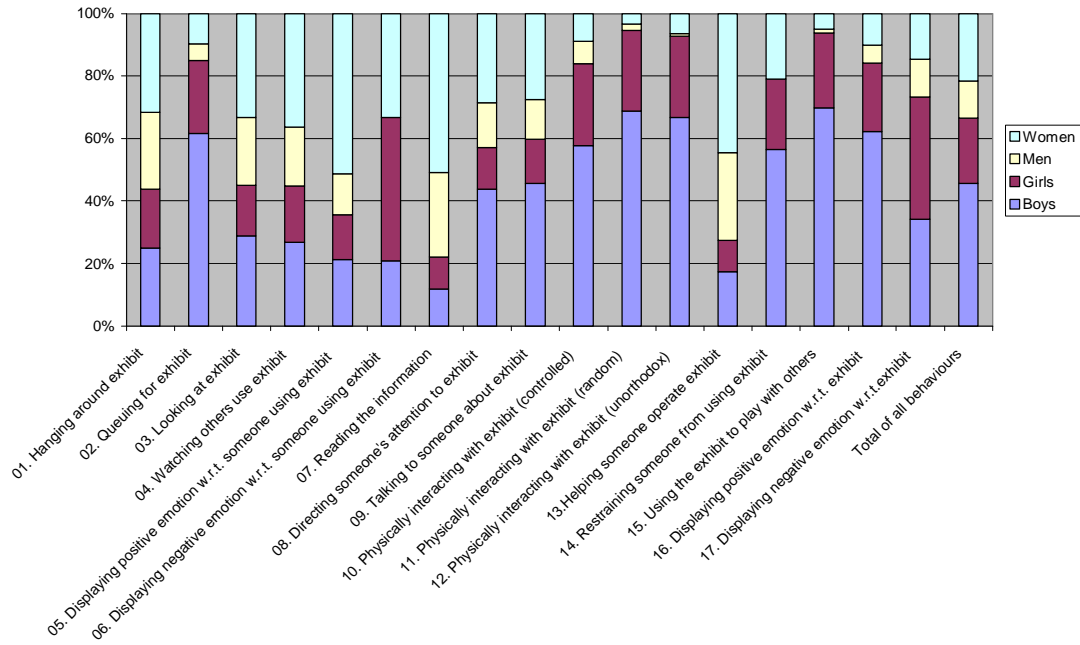
Overall, the young boys and the adult women dominated the proceedings. Explore-at-Bristol's visitor statistics show that there were equal numbers of adults and children that day but, unfortunately, the statistics do not distinguish gender or age. Our sense, on the day, was that there were more boys around than girls and more women around than men but not enough to create the significant difference in behavioural activity that our results suggest. Interestingly, the behaviours where the boys proved most dominant (e.g. physically interacting with exhibit, displaying positive emotion and using the exhibit to play with others) were the ones where the women were (relatively) least active and, conversely, the behaviours where the women were most dominant (e.g. displaying positive emotion towards *someone else* using the exhibit, reading the information and helping someone use the exhibit) were the ones where the boys were least active.

Figure 7a shows the relative frequency of each behaviour for boys versus girls.

FIGURE 7a: Relative frequency of each behaviour for boys versus girls
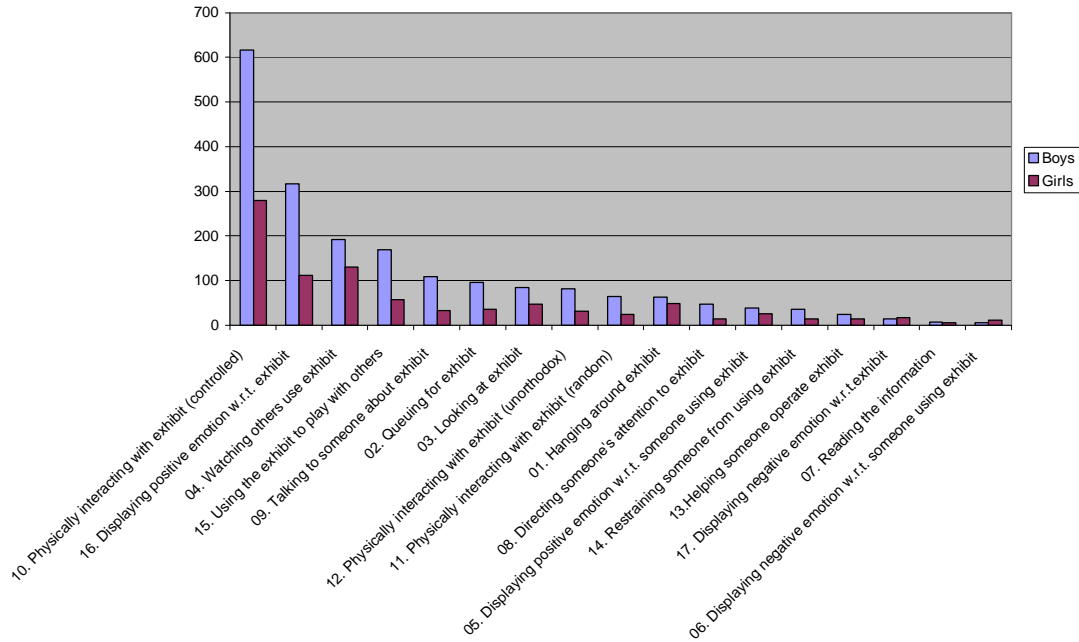
Some of the gender differences are quite marked. Among the children, boys exhibited 2.2 times more behaviours than girls. The disparity was most marked in the case of physical interaction, displaying positive emotion and using the exhibit to play with others. In fact, the only behaviour where girls outperformed boys was displaying negative emotion (although there were a few incidences of this behaviour at all)! Figure 8 shows that this ratio of boy to girl behaviour held for all exhibits, except one: Zapscan. Here the girls exhibited 60% of the action.

FIGURE 8: Distribution of behaviours across 6 exhibits: boys versus girls
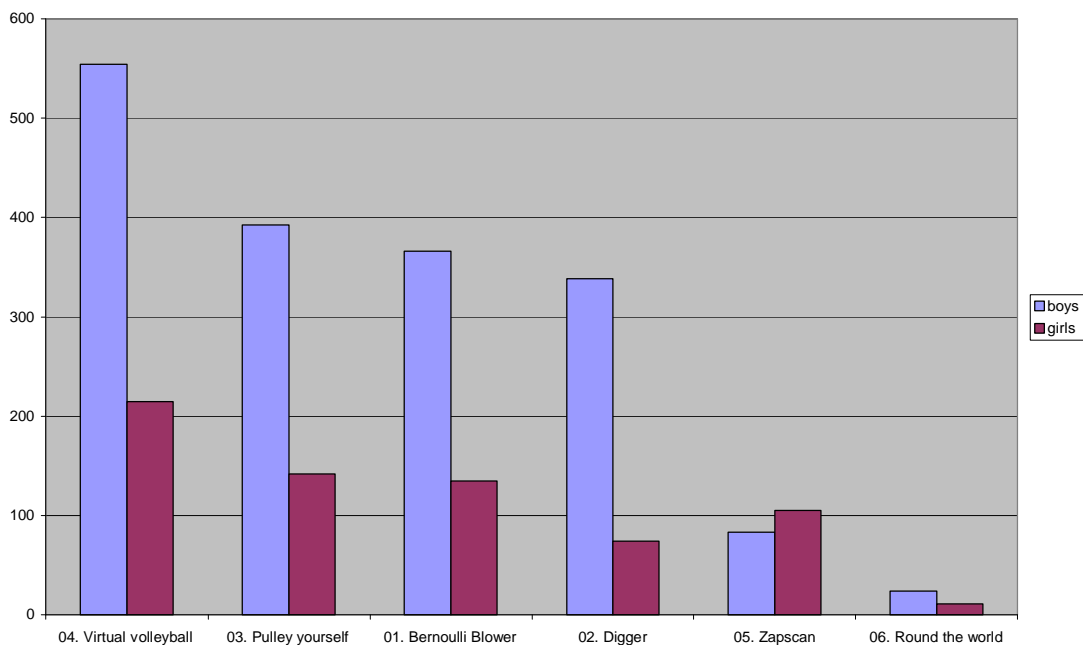
In the adult case (see 7b), women exhibited 1.8 times more behaviours than men.

FIGURE 7b: Relative frequency of each behaviour for men versus women
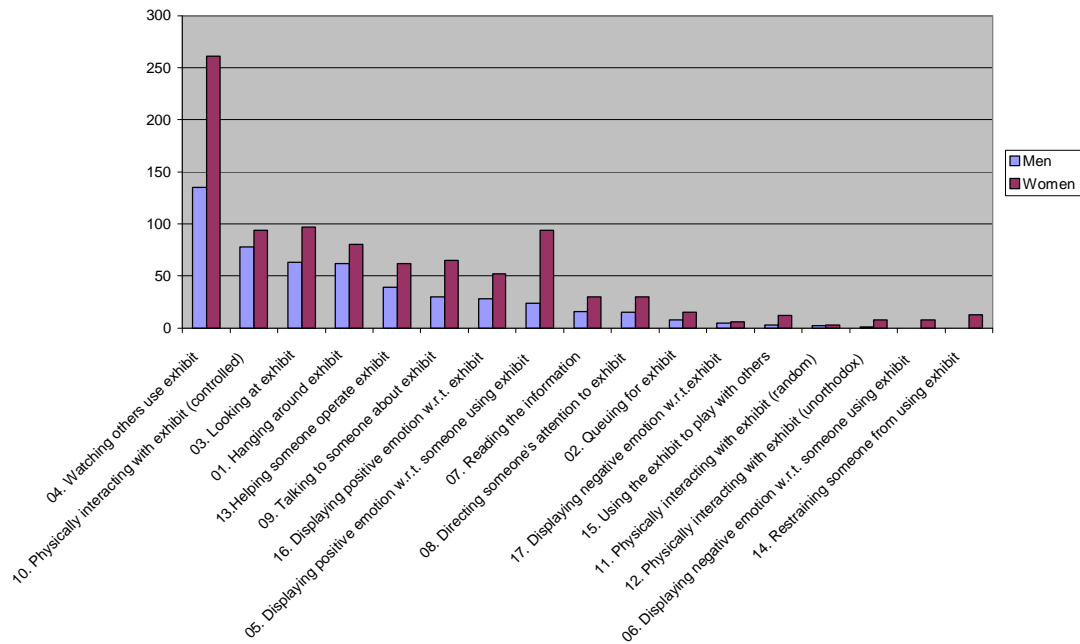
The most marked gender differences were between watching others use the exhibit and displaying positive emotion towards someone using the exhibit (both dominated by the women). Among the less-frequently observed behaviours, we saw women restraining someone from using an exhibit on 13 occasions but never once observed a man doing this!

4   Discussion group results

4.1   Make up of groups and overall pattern of discussion

Figure 9 shows the distribution of age and gender across the 9 discussion groups.

FIGURE 9: Distribution of age and gender of participants across 9 discussion groups
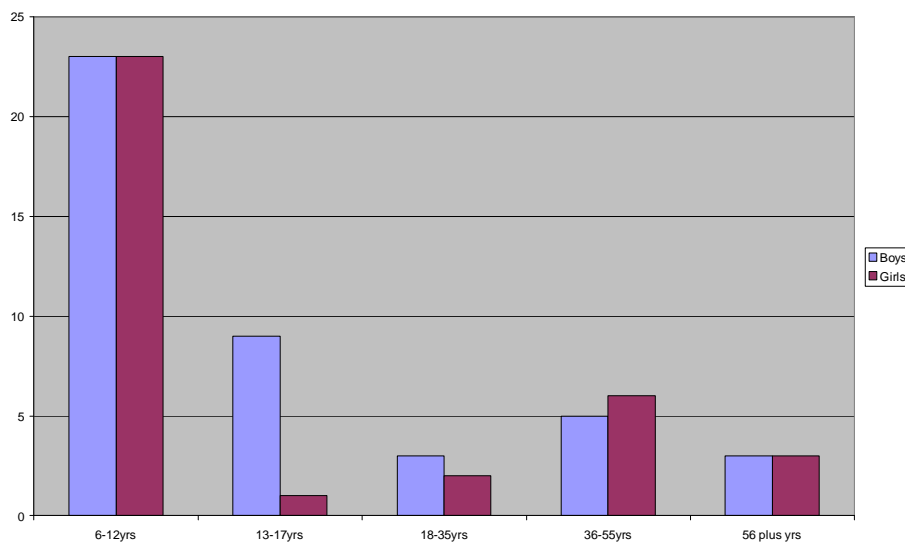
For simplification in most of the analyses that follow, we collapse the 6-17 year age group ('children') and the 18-56 plus age group ('adult').

62% of the participants were visiting Explore-at-Bristol for the first time.

Figure 10 shows which exhibit people recorded as "liking best" when they completed the questionnaires (see Appendix 1) ahead of the discussions.

FIGURE 10: Exhibits named as 'best liked exhibit' on questionnaires
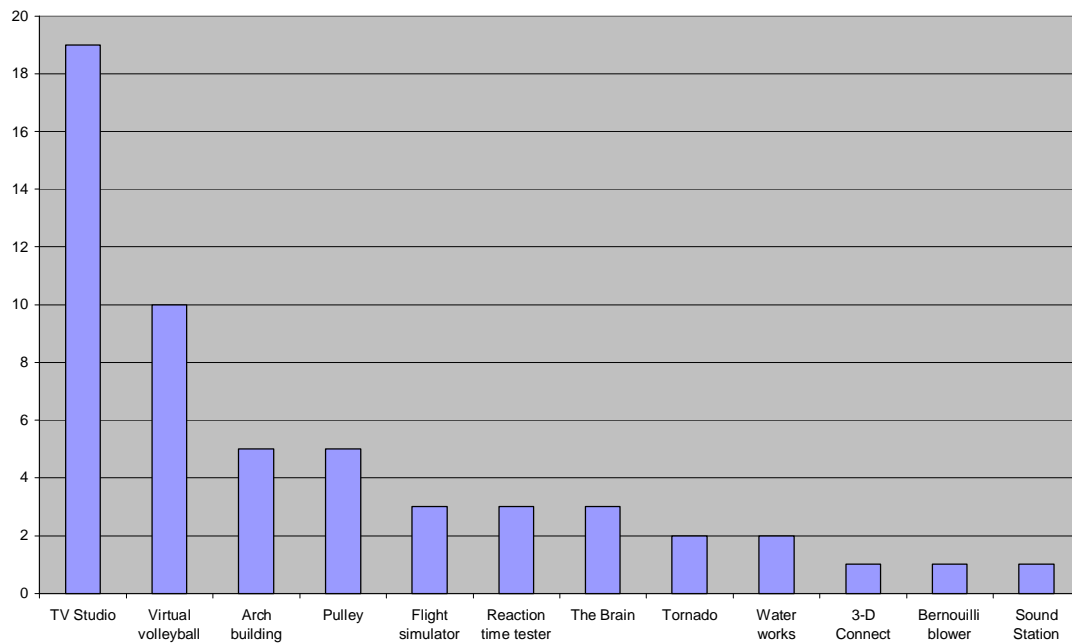
The TV studio was by far the 'best liked' exhibit by both genders. This exhibit allows visitors to create their own mini TV shows and film themselves. The Virtual volleyball was second. However, the pulley, motion simulator and reaction time tester were only ever rated 'best liked' by males.

Figure 11 shows which exhibits emerged as favourites as measured by the number of positive mentions they received during the course of the discussions[6].

FIGURE 11: Frequency of positive mentions of each exhibit

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[6] Sometimes the participants talked about the *characteristics* of exhibits they liked (e.g. "hands-on") without necessarily mentioning a particular exhibit.
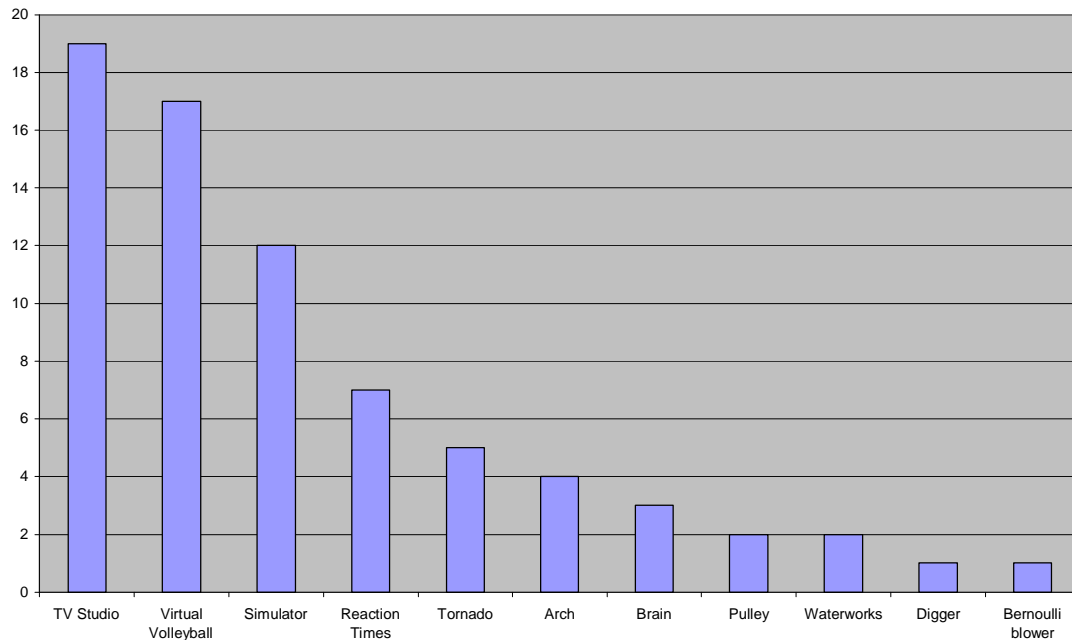
Most of these utterances were made by children. In alignment with Figure 10, the TV studio and Virtual Volleyball were talked about most frequently although less by girls than boys. The (motion) simulator was also frequently mentioned, but almost exclusively by boys.

Unfortunately, the HPLabs' exhibit, ZapScan, was never actually mentioned in the discussion groups even though the Explore-at-Bristol staff describe it as one of their more popular exhibits. We are not unduly worried by this as there are 170 exhibits and another very popular exhibit, 'Pulley yourself' only received one positive mention during the discussions. We are therefore conducting a separate follow-on study into how ZapScan is perceived as an experience relative to other exhibits and relative to 'normal' HP products. The results of this study will be reported in due course (see Reid, 2001).

In the observational study, the boys were 2.2 times more active around the exhibits than the girls although we were unsure what the exact ratios present were. In the discussion groups, the ratio of boys to girls was balanced for the 6-12 year old group and almost balanced for the adults. The only significant imbalance was in the teenage group. However, the boys talked nearly twice as much about the exhibits as the girls (178 utterances compared with 95 utterances). In previous discussion groups we have run (on other topics), we have found that boys and girls are likely to talk an equal amount overall but that this varies drastically with the topic in question. The women also talked significantly more than the men but their comments were almost exclusively limited to talking about the children's experiences. Where they did talk about their own experiences, these were most often at a general, rather than a specific exhibit level, e.g. liking the openness and freedom of the building.

4.2   Characteristics which make exhibits enjoyable

As part of the data analysis, we categorised all the comments which people made about what makes exhibits enjoyable/compelling. Below is the list of the categories that emerged from this exercise and an example quote to illustrate each one.

1. Physical engagement

    "you can jump about and press things"

2. Challenge yourself

"things where you test yourself and see how good you are"

3. Sensation

   "you get some sort of feeling, interact with it and you're using other senses: touch, feel, sight, sound"

4. Social

   "I was like this (arms out) *'crucify me!' and they all clapped and we got it on black and white – it was good!"*

5. Fantasy

   "I've always dreamed of being inside a computer game and on that you can"

6. Personal expression

   "I liked making my own show and things like that"

7. Competitive

   "I mean the Reaction Times are quite simple but you can get really into it and really annoyed, really competitive – it's good fun!"

8. Freedom

   "I liked the TV because you don't have people saying, 'you put it onto that' – you can do it yourself, the background, you can do it yourself and you can dress up which is good as well"

9. Learn something about the world

   "I like to have something where I can go away and think, 'I didn't know that before'"

10. Quantity/variety

    "I liked downstairs better than upstairs because there's more things to do"

11. All ages

    "when it interests the smallest to the largest"

12. Novelty

    "it's nice to feel that there's new experiences which you don't see normally"

13. Learn something about yourself

    "things that you might not have known about yourself, like subconscious things, I found that interesting"

14. Aesthetics

    "you know the ball with lightening, I'd take that – it would just look nice in my room"

Figure 12 shows the relative frequency with which any of these characteristics were mentioned.

FIGURE 12: Frequency of mentions for each characteristic of a compelling experience
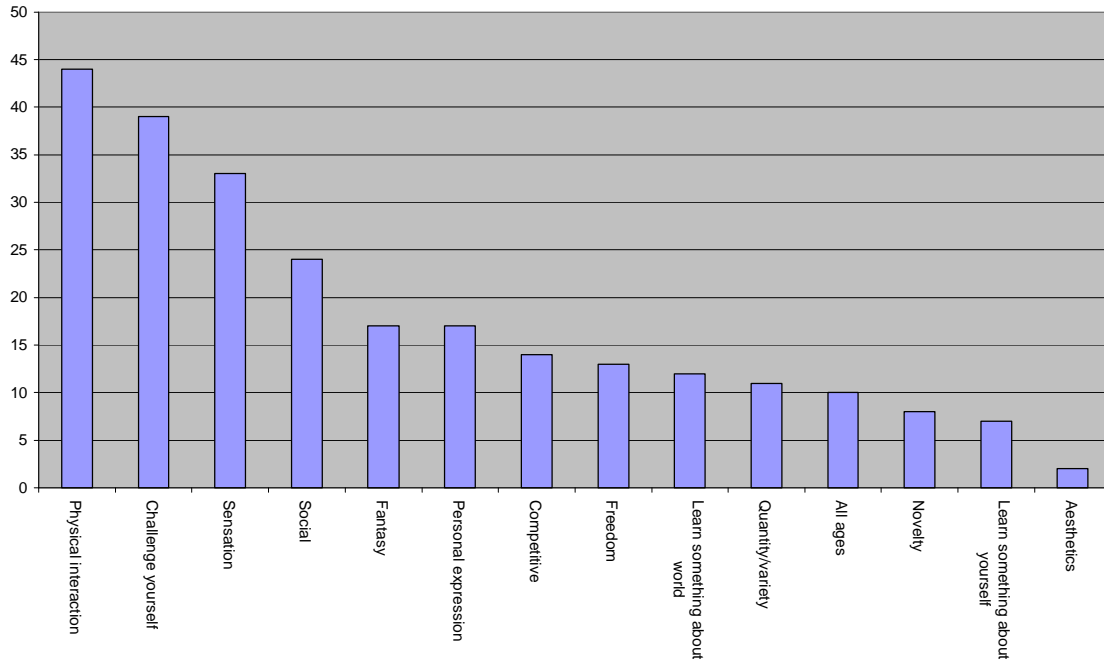
The children (6-17 years) accounted for 72% of the comments about characteristics. In the case of the women, most of their comments described their children's experiences, rather than their own (e.g. *"he was very interested in trying to do it for himself"*). The men, on the other hand, were more likely to talk about their own experiences than about their children's.

Figure 13 shows the frequency data for the children only and compares the boys and girls responses.

FIGURE 13: Frequency of mentions for each characteristic of an enjoyable experience – boys vs girls
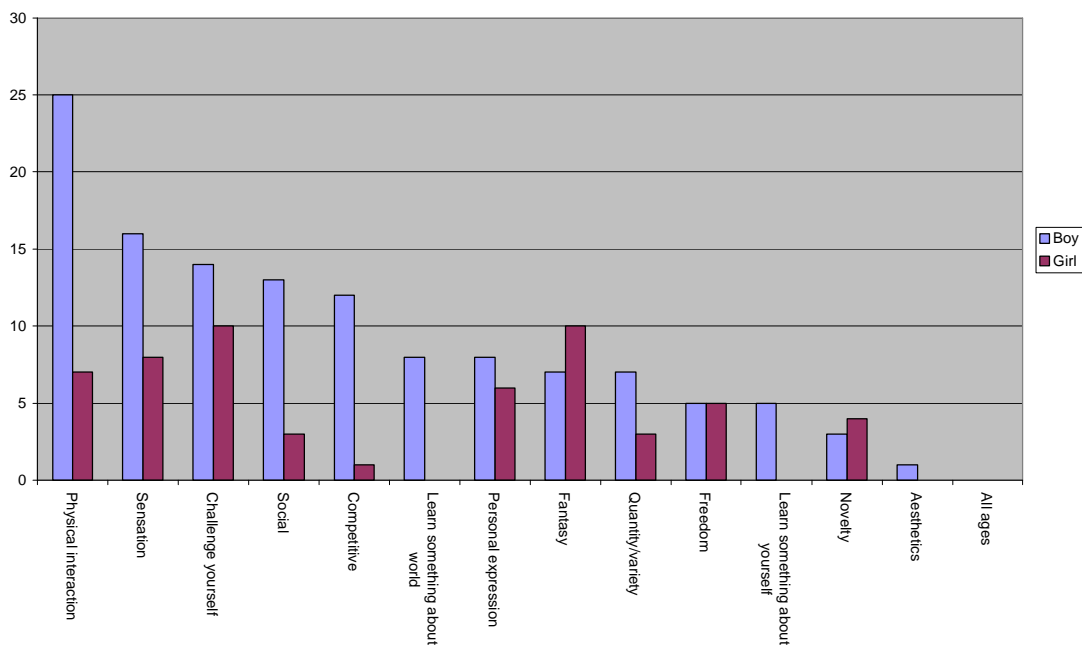
Again the boys made more than twice the number of comments about enjoyable characteristics than the girls. The most marked differences were in the areas of physical interaction, social, competitive and learning. Here the boys were much more verbally enthusiastic than the girls. The girls were (relatively) more engaged with challenge and personal expression; the one characteristic that the girls talked about more than the boys was fantasy/imagination (e.g. *"I've always wanted to be on TV like that"*).

Most participants were very enthusiastic about Explore-at-Bristol and it was difficult to elicit any negative comments. The few we elicited fell into the following categories:-

1. Lacking drama/sensation

   "I suppose it's all a bit push button up here – screens and computer things"

2. Too passive (no physical engagement)

   "the ones where you just have to stand and read and there's nothing to do"

3. Disagreeable sensation

   "I didn't like that cage thing because it hurts your hands"

4. Awkward socially

   "I'd have liked the cage better with someone I knew – I would know them better and I could talk to them"

5. Difficult to use

   "they get frustrated sometimes if they're not quite sure how to do one of the exhibits"

These reflect the same concerns as the positive characteristics above. Figure 14 shows the relative frequencies with which these categories were mentioned.

FIGURE 14: Frequency of mentions of negative characteristics
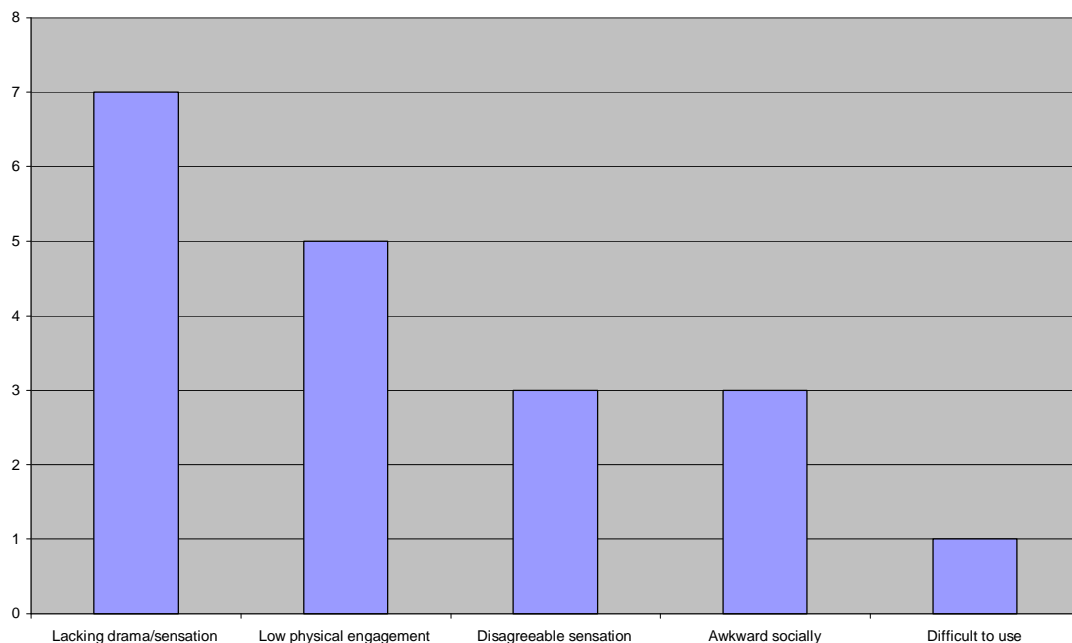
4.3   Overall value of Explore-at-Bristol experience

At the end of each discussion group, we tried to probe how people rated their overall experience of Explore-at-Bristol as opposed to their experiences of particular exhibits. Interestingly, the children very rarely contributed to this part of the discussion.

The adults were most likely to compare the Explore-at-Bristol experience with either a visit to a zoo or a museum. The children were mostly likely to compare it with a visit to a theme park. The data analysis revealed the following dimensions along which adults seemed to assess value for money from Explore and its relative worth compared to other experiences.

1. The length of time which the experience occupies

    "downstairs is all about the body and we've spent one and a quarter hours there – I think it's pretty good value really"

    We found that "a day's worth" seemed to be a common unit for people to use in measuring the value they got.

    "if you can spend a <u>full day</u> somewhere, you feel like you've had value for money"

    "here you feel you've got a <u>day's worth</u> of money"

2. The degree to which the adults can sit back and relax

    "that's what it's all about – if the children are amused and entertained and there's no fighting"

3. The feeling that the children have learned something as well as had fun

    "the children learn something about science"

4. Variety of experience offered

    "this is great because there's so many experiences"

5. Gives you an experience to pass on to others

    "you've got something you can tell other people about – share with them".

Figure 15 shows the relative frequencies with which people used these different dimensions to evaluate their Explore experience.

FIGURE 15: Frequency of mentions of different dimensions of overall value
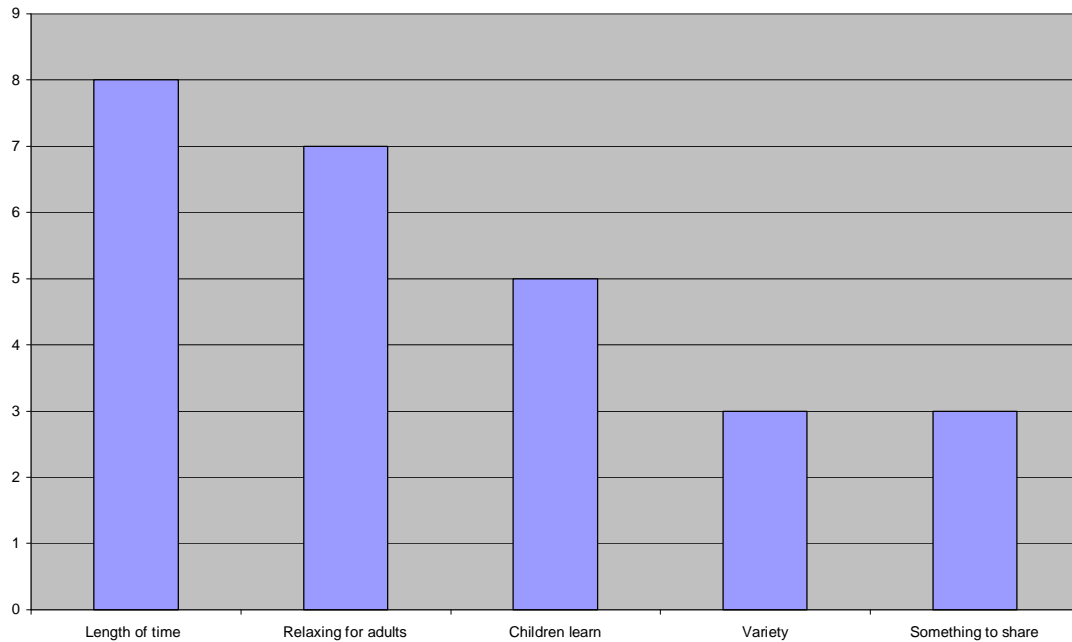
In most cases, the discussions revealed that the women (mothers and grandmothers) had initiated the visit to Explore that day and they were the most likely people to reason about the relative prices and budget considerations involved with paying for the whole family. Most women talked about the ticket money 'coming out of' their 'holiday' (*"we would budget for this as part of a the holiday"*) or 'special occasions' budget (*"I think that's why it's taken us so long to get here – it's been the case that it's for a special occasion"*).

5 Discussion

There are two main findings from this study that look to be fruitful points for discussion:-

1. The dimensions that constitute a compelling technology experience.

2. The gender and family role differences w.r.t. experiencing experiences (*sic*).

5.1 Dimensions of a compelling experience

If we take the 14 characteristics of experience that emerged from the discussion groups (see Figure 12), we can collapse these down into 3 distinct 'dimensions' of experience, each of which has two principal branches (see Figure 16).

FIGURE 16: Three dimensions of compelling experiences

Test of physical or mental skill
"it was really like you had to put all your muscle into it – it showed you how much strength you had – I rang the bell TWICE!"

Creative self expression
"I liked making my own show"

Challenge/Self expression

Drama/Sensation

Bonding/sharing with others
"when you see the fathers enjoying the same thing as the smallest"

Social

Touch, see, taste, smell, etc
"where there's noise and movement and lights and bells ringing"

Competing with others
"you can really get into it and really annoyed, really competitive – it's good fun!"

Imagination/Fantasy
"I always dreamed of being inside a computer game and now you can!"

The 3 dimensions are:-

1. Challenge/Self expression

    This dimension is highly personal – it is either about *testing* your skills (mental or physical) or *expressing* your skills, creativity, views or personality or simply *learning* something new about yourself that you didn't know before. The 'buzz' comes from achieving something you didn't know you could do or from expressing something original about yourself. There is an emphasis on individuality, uniqueness, self-development.

2. Drama/Sensation

    This dimension is about experiencing in the more common-sense use of the word, i.e. the 'buzz' comes either the bombardment of our *physical senses*: sight, sound, touch, smell and/or the grabbing of our *imagination, emotions* and *dreams*.

3. Social

    This dimension is about our relationship with others. The 'buzz' either comes from the intense sense of bonding arising from a moment of shared achievement or shared emotion, or from the sense of superiority over others which comes from out-performing them in a competitive exercise. The latter is particularly powerful for boys visiting Explore with their siblings or classmates.

I use the term 'buzz' advisedly in each case as all 3 dimensions involve the release of different chemicals (endorphins, adrenalin, etc) into the bloodstream causing a powerful physiological reaction to the experience.

Figure 17 shows how frequently people mentioned characteristics along each of these 3 dimensions.

FIGURE 17: Frequency of mentions of each dimension of experience
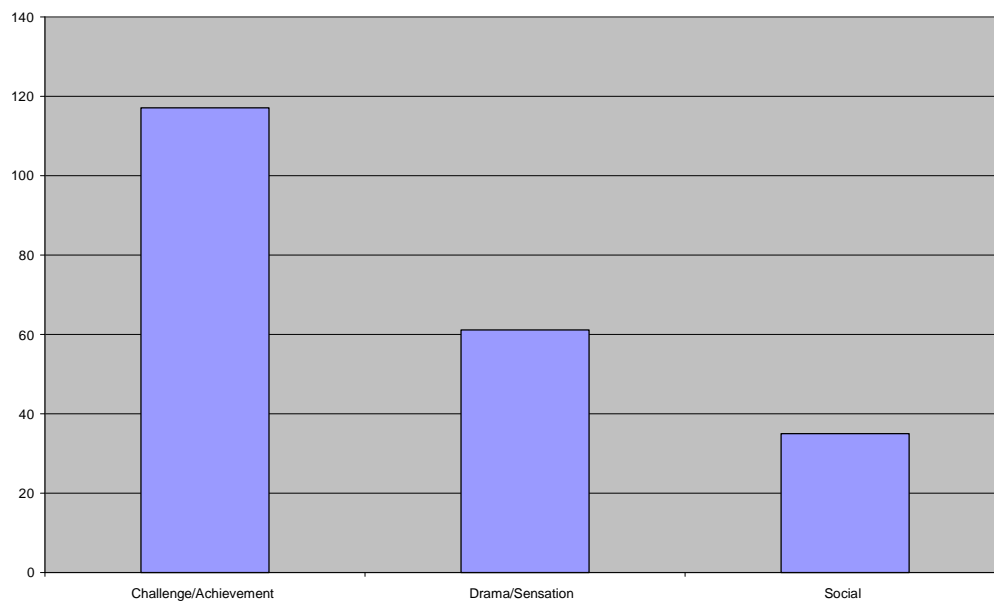
The 'challenge/self-expression' dimension was mentioned significantly more frequently than the 'drama/sensation' dimension and this, in turn, was significantly higher than the social dimension. It would be very interesting to see whether these dimensions would be the same for a very different kind of consumption experience, e.g. a football match or a holiday and whether their relative importance would be the same or different.

The dominance of the 'challenge/self-expression' dimension is consistent with the findings of Csikzentmihalyi (1990) in his studies on 'optimal experiences'. Csikzentmihalyi interviewed hundreds of people about the moments in life that they most enjoyed. He found that people reported some characteristic experiential states that distinguished that moment from the rest of their life. Most importantly, Csikzentmihalyi found that exactly the same characteristics were reported regardless of the context, e.g. playing chess, climbing mountains, playing with babies, reading a book, painting a picture, writing a poem or doing one's daily work. They were also the same across all ages, genders, nationalities and classes. When all the characteristics were present, Csikzentmihalyi called this state of consciousness a 'flow experience' because many of the respondents reported that when they were engaged on these activities, it felt like being carried along by a flow or current with one moment melding into the next. Contrary to expectation, 'flow' rarely happened during relaxing moments of leisure and entertainment but rather when people were actively involved in a difficult enterprise that stretched their mental and physical abilities to the limit. So, people often experienced more flow from what they did on their jobs than from their leisure activities in their free time.

Csikzentmihalyi found that the elements which were most likely to induce optimal enjoyment or flow were:-

- A challenge requiring skills

- A chance of completion

- The opportunity to concentrate whole-heartedly

- Clear goals

- Immediate feedback

- Control over actions

- Expansion of self through experience.

This strongly reflects the profile of the 'challenge/self-expression' dimension that emerged from our study.

In our observational study, we noticed that some behaviours were unevenly distributed across exhibits (see Figure 4). In particular, we noticed that the relationship between the degree of physical interaction with an exhibit and the amount of laughter/smiling were not always positively correlated (see Figure 5). We think that, where these two are not positively correlated, it is likely that the enjoyment people gain from these exhibits (e.g. the digger or the cage) may be of the 'flow' variety where the enjoyment is in the challenge and total absorption in the task and you are too lost in it to express laughter or smiling at that point.

Although participants talked significantly more about the 'challenge/self-expression' dimension, it is interesting to note that the two exhibits which consistently emerged as most compelling across both genders (i.e. the Virtual volleyball and the TV studio) were talked about in terms of all 3 dimensions, i.e. they seemed to offer challenge/self-expression, sensation/drama and social aspects in fairly equal measure.

There were exhibits which proved compelling primarily along one dimension (e.g. the simulator along the drama/sensation dimension and the cage along the challenge/self-expression dimension but both these experiences seemed to be enhanced by the social dimension – a chance to share physical and emotional reaction (in the simulator case) or to turn the challenge into a competition or a chance to exhibit ones skills to others (in the cage case). There weren't any exhibits that proved compelling primarily along the social dimension.

5.1.1   Implications of dimensions of a compelling experience

1. Within HP (to the extent to which we focus on consumer experience at all), we tend to think about how we can enhance a consumer's experience *of* the technical product itself by making it easier, more exciting to use, more pleasurable to look at or easier to share with others. The results of this study show that the compelling experiences in life are of *something else*, not of the technical artefact per se, i.e. they are experiences of social bonding or personal achievement or stimulated imagination. The role of the technology is *indirect*; it is there as an enabler or enhancer of this other experience. I think this is a much richer and more powerful way for us to think about HP products, i.e. not to start with the product and the consumer's experience of that, but to start with the fundamental human experiences which consumers are seeking and find ways in which our technology can possibly trigger, facilitate or enhance one of these life-enriching experiences. We have to be comfortable that, when we succeed, the technical artefact may become transparent – simply an unconscious medium through which the 'real' experience happens.

2. It could be that the model emerging from this study (Figure 16) offers us a way of thinking about which fundamental dimensions of human experience HP could seek to trigger or enhance via our products. The digital camera (and associated products and services) are already successfully positioned to enhance social bonding, as is the cell phone. The ZapScan 'product' is an example of offering children an experience of

creativity and self-expression[7]. As far as I am aware, HP currently has no consumer offerings that present challenge (physical or mental[8]), physical sensation, drama or the opportunity for competition. It may be most promising to pick an area of life that offers one or more of these experiences, e.g. sport or hobbies or art and find ways in which HP products might be used to enhance the compelling experiences involved in these.

3. In HP, we tend to think that the goal of any activity (i.e. the result of its completion) must be worthwhile or enjoyable but Csikszentmihalyi's work shows that the moments of optimal satisfaction actually come from engagement on the task itself and diminish sharply once the goal is accomplished. Interestingly, the PC has unwittingly achieved this where many people enjoy the challenging process of creating things on the PC for its own sake. It may be that by recognising this, we can design more effectively to enhance the task or activity in question. It is important to remember that Csikszentmihalyi showed that this was even more likely to be true in work situations than in leisure activities.

5.2   Gender and family role differences

One of the most striking findings from the study was the marked difference in the level of engagement between the boys and girls. The boys, we observed, were 2.5 times more active around the exhibits than the girls[9] and, in the discussions (where the ratio was more balanced), the boys talked about the exhibits and their enjoyable characteristics twice as much as the girls. As stated earlier, this is a very different pattern from the one we would normally expect in such discussion groups. The obvious implication is that the girls were less engaged with the experiences at Explore-at-Bristol and less enthusiastic to talk about them.

Previous research has shown that girls are less interested in technology for its own sake and do not often talk about it directly but that they are often more interested than boys in things which technology enables them to do, e.g. a cell phone enables them to chat to their friends or a car enables them to get places (see Kidd, 1997; Kidd, 2001 and Silverstone and Hirsch, 1992).   Because Explore-at-Bristol is a science and technology centre, it could be that girls are simply less interested in it as an artefact.

There were also marked gender differences in the exhibits and characteristics that the girls and boys enjoyed most. In the observational study, there was only one exhibit where the girls were more active than the boys and that was Zapscan (which involves creating drawings and then scanning them in and displaying them on a screen or making a greetings card with them). In terms of the 3 dimensions discussed above, Figure 19 shows that the girls talked about the 'drama/sensation' dimension as much as they did about the 'challenge/self-expression' dimension. Indeed, they talked more about fantasy than the boys did.

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[7] Hence, quite possibly the greater appeal to girls (see Figure 8).

[8] Apart from the irritating kind of challenge which results from being difficult to configure or use!

[9] Although some of this difference may have been due to a smaller ratio of girls on the study day.

FIGURE 19: Comparison of gender and age differences across the 3 dimensions
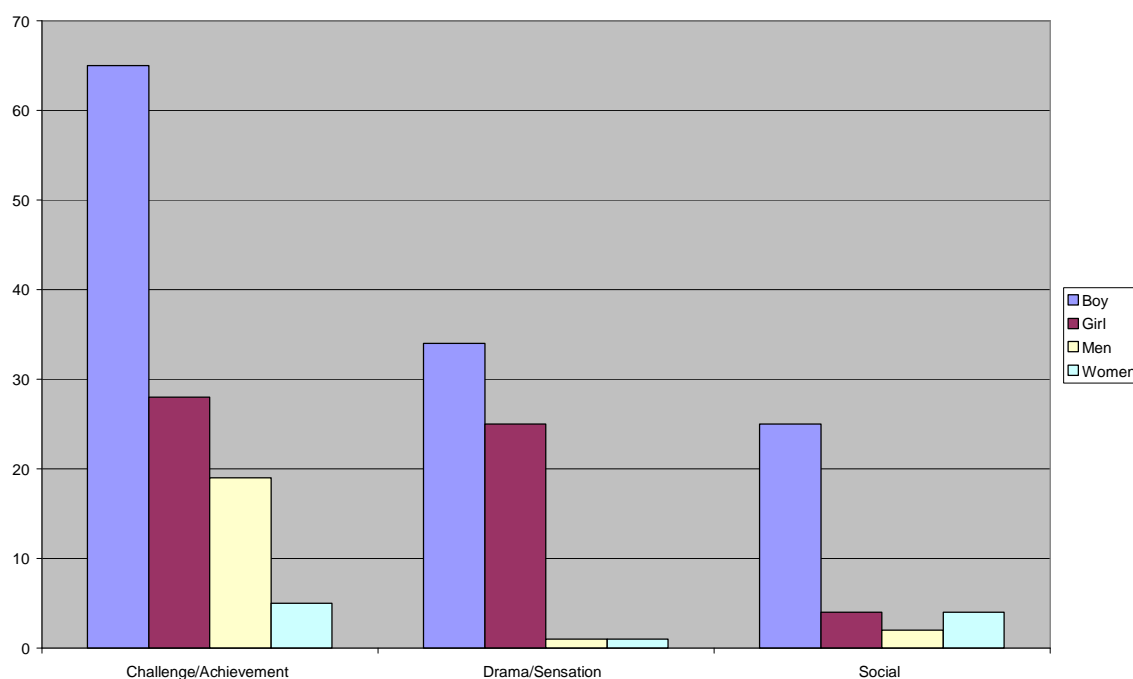
Most noticeably, the girls talked very little about the social dimension. The latter is the most surprising result as girls are known to embrace enthusiastically technology that facilitates their social relationships (e.g. cell phones). The only explanation I can think of is that the girls did not enjoy, as much as the boys, the *kind* of social engagement that the Explore-at-Bristol exhibits facilitated. For example, often the exhibits facilitated competitive engagement with others and the girls did not see competition as enjoyable at all (see Figure 13). The girls also were much less physically active and talked about physical activity less; whereas much of the boys' social enjoyment was based on shared physical activity with their friends.

The second main finding was the distinctive role that mothers and grandmothers played in facilitating the children's experiences. In the observation study, the women were the second most active participants but they engaged in very different behaviours from the boys and from their husbands. In particular, they did not often operate any exhibit themselves but they were very active in watching and encouraging the children using the exhibits, reading about the exhibits and helping their children to understand and use them. In the discussion groups, the women talked much more about their children's experiences than about their own. The husbands reflected something of this pattern but still talked twice as often about their own experiences as about the children's. At the end of the discussion groups, the women most often described themselves as having been responsible for initiating the visit to Explore and seemed to take most responsibility for its success for every member of the family (*"when it interests the smallest to the largest"*).

So, the experience each member of the family has at Explore-at-Bristol is different. They engage in different ways with different aspects of the place and they describe their experiences using different language.

5.2.1   Implications of gender and family role differences

1. There are marked gender differences in the kinds of social, challenge and drama experiences which girls and boys seek out and the relative significance they give to these. Some of these differences are subtle. For example, a large body of research would suggest

that girls are often inclined towards more social experiences than boys but our results suggest that it may simply be the kind of social experience which differs between the sexes where boys may enjoy more competitive relationships and opportunities to share a physical activity.

The results suggest that there could be opportunities for HP arising from a better understanding of the subtle gender differences between the ways boys and girls approach technology and the kinds of experiences they are seeking which technology might mediate.

In the case of Explore, it looks as if there is (however unintended) some gender bias in the kinds of experiences that the exhibits facilitate. The response to ZapScan suggests that it might be possible to introduce some different kinds of exhibits which are geared to mediating experiences of the kind which girls, rather than boys, might seek.

2. In commercial terms, we can be inclined to think about 'an experience' as an identifiable thing which exists 'out there' and then segment the population in terms of how they respond to it and whether they are more or less attracted to it. The results of this study suggest that it is misleading to think about experiences as fixed consumables. Men, women, boys and girls are not simply reacting differently to a set of common experiences created by Explore but they literally are creating, interpreting and consuming entirely different experiences on the day. For a boy, the visit to Explore may be a means to pit their strength or brains against their friends whilst, for a mother, it's a way of gaining *"two happy kids"* for a day. This means, for example, that the competing 'product' for boys may be completely different from the competing product for their mothers. It also means that the business of providing 'experience' as a consumable is a tricky one!

3. The results also showed that people assess the overall value of one experience versus another along dimensions which are often independent of the experience being consumed, e.g. how much of the day it occupies and how relaxing it is for the parents. This affects which budget category these things are assigned to and therefore what other expenditure they are competing with.

In HP, we rarely try to understand the higher level goals which people are, consciously or unconsciously, seeking to fulfil through their consumption activities. Doing so, might open our eyes to different opportunities which HP technology could fulfil and help us recognise, at the level of the household budget, what consumer expenditure HP products are actually competing with. The latter might surprise us.

6   Conclusion

The purpose of this study was to explore how HP might start to develop consumer products that compete more effectively on the experiential dimension.

The results from Explore-at-Bristol showed that there are 3 dimensions which make a technology-mediated experience compelling:

- physical or mental challenge or the opportunity for self-expression,

- physical sensation or emotional drama,

- social interaction/competition between friends and family members.

Each one of these provided people with a physiological 'buzz' increasing their desire to come back for more. The first dimension (challenge/self-expression) seemed to be the most significant of the three and this is consistent with other reported findings about moments of greatest enjoyment ('optimal experiences') in people's lives (Csikszentmihalyi, 1990). The most popular exhibits scored on all 3 dimensions simultaneously.

The results also showed very marked gender and family role differences in the consumption of technology experiences. Boys were significantly more enthusiastic and engaged than girls, except in cases where the technology enabled either personal creativity/expression or room for imagination/fantasy. Mothers played a distinctive role in initiating the visit and working hard to facilitate it being a happy and productive experience for all members of the family. They rarely engaged in the experiences directly themselves. It was clear that different family members were actually creating and consuming different experiences from each other.

Our conclusion is that HP's consumer products offer very little along any one of these 3 dimensions today. The exceptions are HP's digital imaging products which are starting to target the social dimension of experience and the Home PC business which recognised a while ago that multi-media sensation mattered more than spreadsheet or educational programs in the home market. Figuring out how to open out, say, the challenge/personal expression dimension or the element of drama is a tougher proposition but certainly one well worth us exploring further. The first step we need to take is to stop thinking of HP consumer products as primarily utilitarian devices where the only experiential aspects we have to worry about is how easy to use they are or how attractive they look. Instead, we need to take, as our starting point, the compelling experiences which people seek in their everyday lives (the ones which give them a 'buzz', if you will) and explore how HP technology might be deployed to deliver or enhance these for people or at least be strongly associated with them. This will take HP's consumer products and business into new territory.

7 Acknowledgements

8 References

Belk, R. (1991), *The ineluctable mysteries of possessions*, Journal of social behaviour and personality, 6 (6), 17-56.

Csikszentmikalyi, M. and Rochberg-Halton, E. (1981), *Meaning of things*, Cambridge University Press, Cambridge.

Csikszentmihalyi, M (1990), *Flow, the psychology of optimal experience*, Harper Collins.

Kamptner, L. (1991) *Personal possessions and their meanings: a life-span perspective*, Journal of social behaviour and personality, 6 (6).

Kidd, A. (1997), *The meaning and value of home appliances; a pilot study with children*, HPLabs Internal Report.

Kidd, A. (2001), *Gender differences in the value and use of technology*, Presentation to the University of Reading.

Pine, J. and Gilmore, J. (1999), *The experience economy: work is theatre and every business a stage*, Harvard Business School Press, Mass.

Reid, J. (2001), *The ZapScan experiment*, HPLabs Internal Report.

Richins, M. (1994), *Valuing things: the public and private meanings of possessions*, Journal of Consumer Research, 21.

Silverstone, R and Hirsch, E. (1992), *Consuming technologies: media and information in domestic spaces*, Routledge, London.

9 APPENDIX 1: Questionnaire completed by each discussion group participant

Please tick the appropriate box to answer the following questions.

1. I am	male	female

2. My age is	0-5 years	6-12 years	13-17 years
	18-35 years	36-55 years	56 plus

3. I am visiting at-Bristol	on my own
with my family	with friends
with a school or other organised party	

4. My visit to at-Bristol was paid for	by me
by a friend or family member	by someone else
I don't know	

5. I visit at-Bristol	several times a year
once a year	this is my first visit

What I liked best at Explore	What I liked least at Explore