

Solitary vs. shared learning: Exploring the social dimension of museum learning

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Learning in museums is commonly portrayed as a social experience (Allen, 2002; Dierking, 1998; Hood, 1983; Hooper-Greenhill, 1999; McManus, 1987; Wood, 1995). Indeed, the majority of adult visitors to museums come in the company of a partner, friend or family group (Falk & Dierking, 2000; Kelly, Savage, Griffin and Tonkin, 2004), and the presence of such companions is seen as a contributor to the learning experience (Silverman, 1995, 1999; Uzzell 1992, 1993). Research confirms that people's behaviour in a museum is to some extent dependent on the social context of the visit, in particular, the nature of the group with which they are visiting (McManus 1987; 1996). However, it is unclear what effect these differences have on the ways in which visitors learn, and in particular, how the presence of companions during a visit impacts on the learning experience.

There is considerable evidence from education research in more formal classroom settings, that social interaction facilitates learning in many different ways. Slavin (1992) and Azmitia (1996) outline some of the theoretical perspectives that attempt to explain the positive effects of peer interaction on student achievement. Social learning theories, for example, focus on the effects of observing and modelling the behaviour of others. Motivational and social cohesion perspectives emphasise the influence of social factors on the individual's willingness to engage in, and persist with a task. Cognitive perspectives maintain that interactions among students provide opportunities to explain, discuss, argue, present a viewpoint and hear other viewpoints, thus leading to cognitive restructuring or elaboration of the material.

In applying these concepts to the museum learning experience, Paris (1997) suggests five ways in which social interaction facilitates visitor learning: (1) people stimulate each other's imaginations and negotiate meaning from different perspectives; (2) the shared goal of learning together enhances motivation; (3) there are social supports for the learning process; (4) people learn through observation and modelling; and (5) companions provide benchmarks for monitoring accomplishment. Uzzell (1992; 1993) and Blud (1990) further argue that as learning results from the resolution of cognitive conflicts between individuals, museum experiences that are designed to encourage social interaction will be more effective than those relying on individual cognition alone.

Despite the weight of opinion supporting the important place of social interaction in facilitating visitor learning, evidence from our previous research with almost 500 adult visitors to informal learning settings (Packer, 2004) suggests that the relationships between the social and educational aspects of the visitor experience are not clear cut. Although many participants reported having discussed, or at least shared, information with their companions, there was little evidence that this social interaction had led to increased learning. Although not the majority, a considerable proportion of adult museum visitors choose to visit on their own. Some visitors state that they prefer to explore exhibits on their own, even though they come with a partner or group.

There is little doubt that for family groups, social interaction is a vital aspect of the museum learning experience (Dierking, 1992; Kelly, et al., 2004). However, research is needed to explore the importance of social interaction within other types of visitor groups (Falk and Dierking, 2000) and in particular to compare the learning experience of those who share it with a companion with those who experience it alone.

This study will explore quantitative and qualitative differences in the nature and outcomes of solitary and shared learning experiences in a museum context. In particular, it will address the following questions:

1. Do solitary visitors and visitors with a companion differ in their personal agendas for their visit?
2. Do solitary visitors and visitors with a companion differ in the way they engage with an exhibition?
3. Do solitary visitors and visitors with a companion differ in their immediate reports of the learning experience?
4. Do solitary visitors and visitors with a companion differ in the extent to which they discuss the exhibition in the weeks following their visit?
5. Do solitary visitors and visitors with a companion differ in their longer-term memories of the exhibition?

It should be noted that regardless of the social interaction that does or does not occur during the visit, learning is understood as a socially mediated process and the importance of the sociocultural context of learning is acknowledged. For example, the objects and information presented to the visitor have been designed within a sociocultural context, with the intention of communicating with the visitor. This indirect interaction between the exhibit designer and the visitor provides a social context for learning, even for those who visit alone (Falk & Dierking, 2000).

Method

Participants

Forty solitary adults and forty adults visiting in pairs were observed and interviewed during their visit to a museum exhibition area. Four weeks after the visit, 41% of participants (a total of 33 participants, including 18 who had visited alone and 15 who had visited with a companion) took part in a follow-up telephone interview.

The target exhibition

The research was conducted within the *Discover Queensland* exhibition in the Queensland Museum in Brisbane, Australia. *Discover Queensland* presents objects, photographs and stories that capture the history, geography and social fabric of Queensland (Queensland Museum, 2004).

The *Discover Queensland* exhibition was selected for a number of reasons:

- It has a range of displays, including computer touch screens, interactive displays, personal stories and signed exhibits.

- It is a relatively new exhibition which is likely to attract large numbers of local as well as interstate and overseas visitors.
- It is contained within a defined area which could be easily and unobtrusively observed from a number of vantage points.
- It is a permanent exhibition, and so is likely to be available for follow-up research if necessary.

Procedure

Data collection sessions were conducted in October to December, 2003 and covered a range of visitation times including mornings, afternoons and weekends. Adult visitors entering the target exhibition either singly or in pairs were observed by one of two research assistants, working together. (This enabled each member of a pair to be individually observed and interviewed.) Visitors were observed from the time they entered the target exhibition until the time they exited. Research assistants used stopwatches and an observation record sheet to register the time each individual spent in interaction with their partner and other visitors (social interaction), and time spent looking at displays, reading text and engaging actively with exhibits (engagement behaviours). Social interaction and engagement behaviours were recorded for each 15 second interval. Ten visitors (not included in the sample of 80) were observed by both research assistants in order to obtain reliability estimates. Percentage agreement was particularly high in relation to social interaction (99% exact agreement, Cohen's Kappa = .98), and was acceptable for engagement behaviours (88% exact agreement, Cohen's Kappa = .78).

As participants left the exhibition area, they were invited to participate in a brief structured interview focusing on their desired outcomes for the visit, the content of any verbal interactions occurring within the exhibition area, the perceived contribution of their social context (solitary vs paired) to the experience, and learning outcomes in terms of information recalled and self-reported changes in conceptual understanding and attitudes. Follow-up interviews were conducted by telephone approximately four weeks after the visit. Participants were asked what they remembered having seen, felt, thought or talked about in relation to the exhibition, both during and since the visit. Follow-up interviews were considered to be important in order to determine whether the social interaction that occurs during the visit is continued within pairs after the visit.

Visitors who exited the exhibition before a cut-off time of four minutes were excluded from the sample, as were those who were joined by additional companions after observation had commenced and those who declined to participate in the on-site interview.

Results and Discussion

Do solitary visitors and visitors with a companion differ in their personal agendas for a visit?

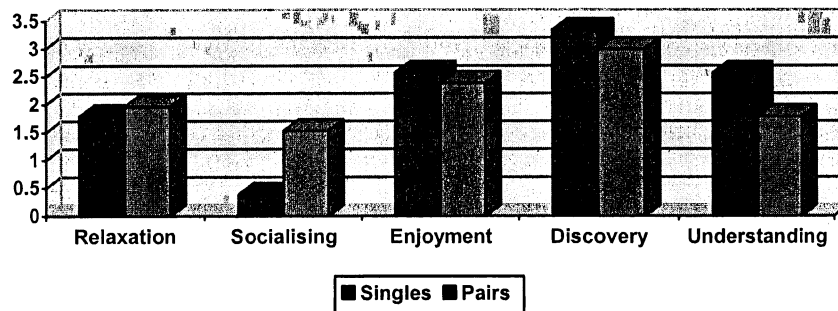
Previous research indicates that visitors' personal agendas or desired outcomes for their visit have a significant effect on their experience of learning during the visit (Falk, Moussouri and Coulson, 1998; Packer, 2004). It is therefore important to

establish whether solitary visitors and visitors with a companion differ in this regard. Participants were asked to rank the importance of five possible outcomes of their museum visit (derived from previous research by Packer, 2004):

- Relaxation (recovering from the stress of life),
- Socialising (doing something with a friend or partner),
- Enjoyment (being pleasantly occupied),
- Discovery (finding out new things) and
- Understanding (thinking deeply about events and issues).

Solitary visitors were found to place higher importance on Understanding than visitors with a companion, and lower importance on Socialising (Mann-Whitney test, $z = 2.41$, $p = .02$ for Understanding; $z = 3.56$, $p < .01$ for Socialising, see Figure 1). It is interesting to note, however, that both solitary visitors and visitors with a companion gave the highest priority to *Discovery (finding out new things)* and the lowest priority to *Socialising (doing something with a friend or partner)*.

Figure 1
Importance of five visitor agendas (desired outcomes)



Do solitary visitors and visitors with a companion differ in the way engage with an exhibition?

Solitary visitors and visitors with a companion were compared with regard to the time spent in social interaction, and the time spent in different types of exhibit engagement (no engagement, looking, reading and active engagement). Because of the high variability in total time spent in the exhibition area, measures of social interaction and exhibit engagement were calculated as a percentage of each individual's total time in the exhibition area, in order to give a more realistic measure of the way in which visitors spent their time.

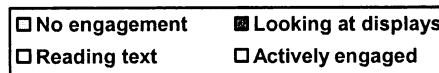
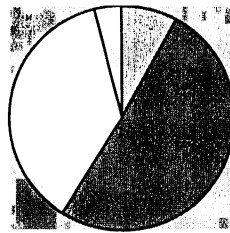
As would be expected, visitors with companions spent a much larger proportion of their time in social interaction than solitary visitors ($t_{78} = 9.19$, $p = .000$), although it should be noted that only 20% of their time on average was actually spent interacting (with a range from 3% to 52%). More revealing, however, are the significant differences in the proportion of time solitary and paired visitors devoted to different types of engagement with exhibits (see Figure 2). Solitary visitors spent a greater proportion of their time reading text than pairs ($t_{78} = 2.62$, $p = .01$), while paired visitors spent a greater proportion of their time looking at displays ($t_{78} = 2.78$, $p =$

.007). Pairs also spent a greater proportion of time actively engaged, i.e., physically interacting with displays and touch screen computers, although this did not reach statistical significance using a two-tailed test ($t_{78} = 1.84, p = .069$). One possible explanation for this difference in physical interaction with exhibits is that visitors perceive a small amount of social risk to be associated with such interaction, and research consistently indicates that people are more likely to take risks when they have a companion.

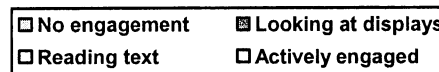
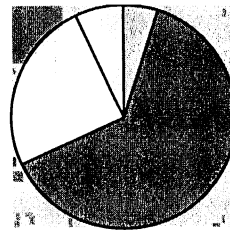
Figure 3

Percentage of time spent in social interaction and exhibit engagement

Singles



Pairs



In order to understand the potential impact of these differences on visitor learning, it is important to know the content of the social interactions, and the extent to which they provide a viable alternative to reading as a support to learning. In the present study, paired visitors were given a list of nine types of social interaction and were asked to indicate which had applied to their interactions with their companion. Visitors' responses indicate that most pairs did report having engaged in interactions that could be seen to be supportive of learning, e.g., sharing opinions about the displays and explaining what things were. Consistent with the observation findings, discussing information derived from text or audio presentations was reported less frequently by pairs than discussions relating to the displays themselves. Thus, when social interaction occurs in relation to an exhibit, it is more likely to involve visitors in looking at the display rather than in reading the associated text.

Do solitary visitors and visitors with a companion differ in their immediate reports of the learning experience?

As they exited the exhibition area, participants were asked a number of questions about their learning experience: Did they find out anything new, and if so what? Were they reminded of anything they already knew? Did anything in the exhibition arouse any emotions for them? Did they change the way they thought or felt about anything? The majority of both solitary and paired visitors answered in the affirmative to all except the last of these questions, and there were no significant differences between groups. These findings indicate that neither solitary visitors nor those with companions have any advantage in terms of the learning they experience during their visit.

When asked whether the social context of their visit (“being on your own” or “having company”) had contributed to their enjoyment of, or the value of the experience, the majority of both solitary visitors (68%) and visitors in company (60%) answered “yes, a lot” (4 on a 4-point scale), with no significant difference between the groups ($\chi^2_3 = 2.84, p = .416$). Participants were also asked to briefly explain *how* being on their own or having company had contributed to the experience. The most common response from solitary visitors related to being able to experience the exhibition “at my own pace”. Indeed, 9 of the 40 solitary participants used those exact words, and an additional 11 used words to that effect, e.g. “no rush”, “time to read”. Other reasons given related to the greater choice and control possible as a single, e.g., “I can look at what I want to look at”, “I can do my own thing”; and the freedom from distraction, e.g., “I can get more immersed in it”, “I can feel what I feel without input from others”, “concentration levels- no interruptions”, “you miss more when you are in a group” (check quotes). Only three of the forty solitary visitors reported that being on their own had *not* contributed to the value of the experience (1 on the 4-point scale). These visitors indicated that would have preferred to have had someone with whom they could discuss things.

The most common response from paired visitors regarding the ways in which company had contributed to their experience was the opportunity to share thoughts, ideas and interests e.g., “it’s good to talk to someone if you see interesting things”, “they can raise interesting points and you can share yours”, “enjoy bouncing ideas”. Indeed, 12 of the 40 paired visitors used the word “share” or “sharing” in response to this question and an additional 13 used words to this effect. Other common responses were that the experience was more enjoyable with company, or the converse, that it would not be so enjoyable alone, e.g., “it’s fun to talk”, “nice to have company”, “I would be lonely and lost by myself”, “it’s boring being alone”. A few participants also indicated that their partner had pointed things out to them that they might have missed otherwise, and one participant referred to a “sense of security” from being in company. Seven participants reported that being in company had *not* contributed to the value of the experience. Most of these did not provide reasons, but one participant indicated that they and their partner “went separate ways”.

These findings suggest that visitors have distinct preferences for the way in which they experience museums, and in particular whether they prefer to be alone or in company. As the social context of the visit was allowed to occur naturally in this study, it would appear that visitors may have self-selected the conditions that suited them best. Interestingly, both solitary visitors and those in company referred to the learning benefits of the particular social context they had selected for themselves. Thus solitary visitors benefited from the freedom to choose how they would allocate

their time and attention, and were able to engage in deeper personal reflection, while visitors in company benefited from the opportunity to share and discuss ideas, and were able to support and enhance each other's learning. These findings suggest that the opportunity to self-select from different learning styles is a major advantage that free-choice learning environments can offer their visitors.

Do solitary visitors and visitors with a companion differ in the extent to which they discuss the exhibition in the weeks following their visit?

It was expected that paired visitors would be more likely to discuss the exhibition in the weeks following the visit than solitary visitors. This was not the case, however. Solitary visitors were just as likely as paired visitors to have discussed the things they had seen or learned with family or friends ($\chi^2_1 = 0.54, p > .80$). Indeed, over 75% of both solitary and paired visitors reported having discussed the exhibition with others in the four week period following the visit. This finding adds further weight to the evidence that there is no learning advantage for either solitary or accompanied visitation.

Do solitary visitors and visitors with a companion differ in their longer-term memories of the exhibition?

There were no differences between solitary and paired visitors in the number or types of memories they reported when questioned four weeks later. Visitors were also asked why they had remembered these particular aspects of their visit. Only 3 of the 24 participants who responded to this question gave social interaction as a reason for their memories. The only difference between solitary and paired visitors in the reasons given for their memories was that solitary visitors were more likely to cite personal connections as their reason for remembering than were paired visitors. For example: "I used to live in a house like that. I used to sleep on the verandah. It reminded me of my childhood." One explanation for this finding might be that solitary visitors engage in more personal reflection than paired visitors and so are more likely to make personal connections with the information presented.

Conclusion

Previous theoretical approaches to learning in museums have stressed the importance of the sociocultural context of learning and visitor meaning-making (Falk & Dierking, 2000; Silverman, 1999a) and the potential contribution of social interaction to the learning process (Paris, 1997; Uzzell, 1992; 1993). The present study provides some preliminary evidence regarding the impact of social interaction on the learning process in museum environments and challenges the supposition that social interaction is more beneficial to learning than a solitary experience. Overall, the findings support the conclusion that there is no significant learning advantage to either solitary or shared museum experiences. It would appear, rather, that solitary and shared learning experiences can be equally beneficial, but in different ways.

The findings suggest that there may be a learning advantage in having access to a social context that is consistent with the learner's preferred approach. Those who choose to visit alone, for example, value being able to engage in personal reflection without distraction; those who visit in company value being able to share the

experience and discuss ideas with others. Both approaches are conducive to learning and are consistent with a constructivist understanding of meaning-making in museum contexts (Hein, 1996; Rounds, 1999; Silverman 1999). Further research with larger samples of visitors in a variety of museum contexts is necessary to fully test and extend these conclusions.

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