Engaging a Design Community Online

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Abstract

The Powerhouse Museum (PhM) is one of Australia’s largest museums with a collection of 400,000 objects relating to design, science and technology. PhM is a leading exponent in the design and implementation of social media tools through which to engage online communities. For example, the objective of its Design Hub portal was to create an online resource that would become the first stop for design-related information and resources for students and practitioners in the state of New South Wales. Focusing on the Design Hub portal, this paper presents a case study on designing for online user motivation to ensure that social media tools and networks engage the target community. Research tools – based on human-computer interaction knowledge – include expert interface analysis and web analytics. Findings from this case study underline the importance of making an online community of contributors visible to each other and to the wider audience.

Keywords

social media; online communities; motivation; human-computer interaction.

1 Introduction

The Powerhouse Museum (PhM) is one of Australia’s largest museums with a collection of 400,000 objects relating to design, science and technology. In 2004, PhM updated its website after a two-year user survey. From 1,048 questionnaire responses, 75% visited the PhM site primarily to plan a physical visit to the museum (Miller, Dawson, & Perkins, 2003). From these results, PhM specified that its site redesign should focus on serving the information needs of new and repeat visitors to the physical site in central Sydney. As a result, PhM began implementation of a collections gateway in 2004 through which both national and international design collections could be accessed. The objective of the ‘Design Hub’ (D*Hub) project was to create a Museum resource that would become the first stop for design-related information and resources for students and practitioners in the state of New South Wales (the Powerhouse being a state-funded museum). The first collection to go online would be the Powerhouse Museum’s own; other design museum collections would be added post-launch, using standard document description protocols to aggregate collection search results from multiple institutions (Chan, 2006a). Traditional museum collections are not for lending; whereas lending library collections are designed to be borrowed and used by participants to inform their own work. Therefore – through the D*Hub project – PhM was attempting to move the museum some way towards the lending library’s mission.
1.1 Research design
This research is structured according to Yin’s five components of case study research design (2003, p.21):

a) Study questions.
b) Study proposition.
c) Unit of analysis.
d) Linking data to propositions
e) Criteria for interpreting findings.

1.2 Study questions
In addition to the D*Hub project, the PhM web development team has designed and implemented a number of innovative social media projects designed to make the Museum’s content and collections more engaging to online visitors. Therefore PhM constitutes a rich site of investigation for work on design, social media and museums. In order to adhere to the first of Yin’s five components of case study design, this case originated with the initial study questions *how and why does the D*Hub project engage a design community through social media tools?*

1.3 Study proposition
Study propositions are those factors associated with the site of investigation that direct “attention to something that should be examined within the scope of study” (Yin, 2003). In this instance, the study proposition was derived from some of the design challenges faced by the PhM web development team during its implementation of the D*Hub project. For example, the team’s initial response to the D*Hub brief was to insert a magazine-style interface between the collections aggregate and the user, in order to repurpose existing collections content for the requirements of the target user group. Such a magazine interface is hardly a new idea; D*Hub’s informants include the international design ‘e-zine’ ‘Design Boom’ as well as the Australian arts portal ‘artsConnect’. D*Hub is differentiated from these examples through its direct link to the Powerhouse Museum’s object and image content management system (CMS). But despite this link, many of the object records in the CMS do not have any kind of commentary attached, either curator- or user-generated.

Therefore a distinguishing feature of D*Hub would be the addition of editorial, featured articles, and events listings through which to provide a different kind of interface to encourage users to browse and borrow PhM content to inform their own study and/or practice. In so doing, the ambition of the D*Hub portal was to motivate the New South Wales design community sufficiently so that a critical mass of users would generate content for the site. The lead developer described one scenario in which the motivation for user contribution would be the opportunity to build “social capital”:
“So you’re a design student, how are you going to impress your future employers? You’re going to do that by having had 50 posts up on D*Hub... You might know a lot about skateboard art. You might go to all of the skateboard art shows; you know who’s hot, whatever. OK, put that knowledge up on our site rather than just putting it up on your own site because our site brings you social capital that putting it on your own site doesn’t” (Chan, 2006b, unpaged).

This kind of top-down assumption about user motivation by the lead designer has a basis neither in research nor anecdote. Therefore the informal study proposition that underpinned this case study was that top-down, features-oriented interface design does not account adequately for soft factors such as user motivation. This study proposition informed the definition of the case study’s unit of analysis.

1.4 Unit of analysis
Yin stresses that a clear definition of the ‘case’ itself is essential to the success of a case study; in other words, the researcher must specify the unit of analysis (2003, p.22). This unit emerged from further investigation into the Design Hub portal. By the time it was launched in August 2006, D*Hub had consumed approximately 2,000 hours of in-house development by the PhM web team, spread over eleven months (although much of the PhM’s implementation is modular, so that code and systems which are created for one project can be reused by others). The enduring challenge for D*Hub and other PhM social media initiatives is how to generate and maintain sufficient user motivation to ensure their ongoing success over the long term (Chan, 2006b). Hence user motivation with respect to social media emerged from the exploration of the site as the primary unit of analysis of the case study.

Like many of their physical equivalents, online communities can struggle to attract and retain members who actively contribute on a regular basis. A study by Lancaster University of the popular peer-to-peer (P2P) music sharing service Gnutella conducted a one-week monitoring session of P2P traffic. It found that 85% of peers share no music files on the service; 86% share 10 files or fewer. Wikipedia reports that as of June 2005, 1.81 million computers were connected to the Gnutella P2P network; if this figure is even remotely accurate then it appears that – although Gnutella has achieved a critical mass of peer-contributed content – it is the number of free riders (those who download music files while not contributing any to the network) that is more notable. The Lancaster report is quite articulate on this matter, suggesting that users of P2P networks like Gnutella

“face a social dilemma. They must decide whether to contribute to the common good by sharing files or maximize their personal experience by free riding... Individuals gain no personal benefits from uploading files (in fact, it’s inconvenient), so it’s ‘rational’ for users to free ride. However, significant numbers of free riders degrade the entire system’s utility” (Hughes, Coulson, & Walkerdine, 2005).
If uploading a music file to a P2P music share is considered detrimental to an individual community member’s quality of experience, then the expectation that the D*Hub community would upload news or even write original content may seem rather ambitious.

1.5 Previous work on user motivation for social media

To some extent, the design rationale behind D*Hub borrows from the model of user-generated knowledge that drives the success of wiki-based sources such as Wikipedia. Work by Hoisl et al. (2007) examines how social reward mechanisms can motivate users into making more contributions to a wiki community. Discounting the use of financial rewards as an option, Hoisl et al. worked with the same MediaWiki software used by Wikipedia to develop a user motivation system through a calculation based on three reward mechanisms:

1. Amount of references; including size of a reference; number of links pointing to it; and number of links pointing to the specific article.
2. Rating of articles; an open rating system whereby users can vote for or against an article.
3. Most viewed articles; a simple user visitation count.

The proportion of users who actually generate content for Wikipedia is small; therefore a substantial critical mass of users is required to support a self-sustaining community of actual content generators. Hoisl et al.’s rewarding system seeks to “create qualitative high results which are necessary to generate non-monetary incentives for users” (Hoisl, Aigner, & Miksch, 2007). In effect, their prototype reward system gives gold stars to reliable, regular and significant contributors to a wiki, in a similar fashion to how the eBay system generates gold stars for reliable buyers and sellers. The authors acknowledge that their reward mechanism will be insufficient “to motivate enough people to form an active community to participate in every wiki. Users must have an intrinsic motivation to contribute” (Hoisl et al., 2007).

Agreeing that “Under-contribution is a problem for many online communities”, Beenan et al. (2004, p.212) conducted field experiments which applied social psychology theories to the redesign of an online movie review and recommendation community of 80,000 members, of which 7,000 were active in the six-month period prior to the research. 830 members were sent motivating emails, in response to which 397 (47.8%) members logged in and rated at least one movie. Descriptive analysis including all participants revealed a movie review rate of 19.26 movies during the week (mean), a significant increase on the previous number of 5.4 movie reviews per week in the 6 months before the invitation. The researchers expanded upon social loafing theory to propose that users would be more motivated to contribute to an online community if they were reminded of both the uniqueness of their contributions and the benefits that followed from this contribution. Social loafing suggests that “People exert less effort on a collective task than they do on a comparable individual task.” In the case of the movie review community, the researchers sought to motivate individuals to review or recommend rarely-
rated movies in the database by making them aware of the uniqueness and value of their contribution to the community – with some success (Beenen et al., 2004).

A proven tactic to increase user participation is to automate the dissemination of an individual contribution throughout the community. This can encourage active participation, since the user has proof that his/her contribution does connect with a peer network. This tactic was employed to great effect by Mark Zuckerberg, who founded Facebook whilst still a Harvard student. Initially the social network was open only to students, who posted news and updates to their personal profile page. Zuckerberg felt that the problem with the user experience was that it took too long for a Facebook user to browse the pages of their friends. In response, Zuckerberg developed “News Feed”, an automated function that sends changes in a user’s profile page to his/her friends’ list. Hence users no longer had to browse through their friends’ pages; they were now automatically informed of every change that each friend makes. On its initial release, the News Feed function caused some panic in Facebook users, who suddenly found that every personal profile update they made was being broadcast to every member of their friends’ list. However, this panic was replaced by widespread acceptance of the automated information dissemination feature. Shortly after the introduction of News Feed, Zuckerberg allowed non-students to use Facebook; the network now boasts approximately 100 million users (Thompson, 2008).

2 Method

2.1 Analysing user motivation
The review of previous work illustrates three key design elements aimed at increasing user motivation to participate via social media tools:

a) Visibly reward user-generated content (Hoisl et al. 2007).

b) Make contributors aware of the uniqueness and value of their contribution to the community (Beenan et al. 2004).

c) Automate dissemination of individual contributions throughout the community (Zuckerberg, in Thompson 2008).

I conducted an expert examination of the D*Hub interface on 03 November 2008 to verify whether it incorporated any of these design elements, or other user motivation devices. This examination was based upon my own professional background and training in web and interface design. The examination was constructed using elements adapted from Powell’s robust website evaluation tool (2002) which I have used successfully in professional practice. These elements included:

- **Explicit functionality**: high-level descriptive and navigational features.
- **Content volatility**: how recent (and copious) is content – news, articles etc.?
- **Information reliability**: is content reliable and authoritative?
- **Community/contributor visibility**: in terms of design for user motivation, are user contributions attributed and visible to the wider community?
- **Aggregation**: is third-party content aggregated effectively within the portal?

The expert examination of design-for-motivation devices incorporated within the D*Hub showed that:

- With reference to Hoisl et al. (2007), there is no visible reward for contributors. The entire D*Hub community appears largely anonymous.
- With reference to Beenan et al. (2004), there is no attempt to make contributors aware of the uniqueness and value of their contribution. Conversely, there is unwarranted repetition of featured content; and a lack of content circulation.
- With reference to Zuckerberg’s work with Facebook (Thompson 2008), there is no automated dissemination of individual contributions beyond RSS notification.

D*Hub has yet to attain a critical mass of user-generated content after two years of operation, despite sporadic promotions such as competitions.

### 2.2 Linking data to propositions

An analysis of PhM site usage statistics from the period 21 July to 17 August 2008 was conducted using the Google Analytics tool. Comparative data were generated from the D*Hub portal; the main Powerhouse domain of www.powerhousemuseum.com; and the Sydney Observatory blog. The Observatory is part of the Powerhouse Museum and it hosts a simple blog site which supports a community of amateur astronomers. This blog is maintained by one person (the Senior Curator of Astronomy) and was implemented using the free Wordpress blog application. Therefore the Observatory blog is a much smaller social media project than D*Hub in terms of scope and budget.

Table 1 below shows that the D*Hub portal experienced the highest **bounce rate**, indicating that 74% of visits resulted in the user leaving the site at the first page. “Bounce rate” refers to percentage of single-page visits or visits in which the user left the site from the entrance page. This rate could be explained by a number of reasons, including:

- The user found the information s/he was looking for on that page.
- The user did not find D*Hub to be an appropriate destination and left straight away.
Table 1: usage comparison of PhM main domain, D*Hub portal, and Observatory blog, 21 Jul to 17 Aug 2008.

<table>
<thead>
<tr>
<th></th>
<th>PhM main site</th>
<th>D*Hub</th>
<th>Observatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visits</td>
<td>270,250</td>
<td>70,029</td>
<td>18,417</td>
</tr>
<tr>
<td>Page views</td>
<td>634,460</td>
<td>126,785</td>
<td>51,295</td>
</tr>
<tr>
<td>Pages per visit</td>
<td>2.35</td>
<td>1.81</td>
<td>2.79</td>
</tr>
<tr>
<td>Bounce rate %</td>
<td>67</td>
<td>74</td>
<td>53</td>
</tr>
<tr>
<td>Avg time on site (m:s)</td>
<td>1.38</td>
<td>1.01</td>
<td>2.1</td>
</tr>
<tr>
<td>New visits %</td>
<td>84</td>
<td>89</td>
<td>83</td>
</tr>
<tr>
<td>Visitors</td>
<td>243,439</td>
<td>65,587</td>
<td>16,155</td>
</tr>
</tbody>
</table>

Google Analytics does not measure the reason for this high bounce rate; but it does reveal that users did not browse the D*Hub site. The high bounce rate corresponded to the low average number of pages viewed per visit to D*Hub (1.81); as well as the low average time spent on the site (1 minute). In contrast, the Sydney Observatory blog had a much lower number of visits (18,417) than the PhM domain and the D*Hub portal. But these visits seem to last longer than those to D*Hub:

- The bounce rate is low (53%), indicating that approximately half the users visited more than their landing page on the blog.
- This is correlated by the highest number of pages per visit in the comparison (2.79) and the longest average time spent on the site: 2 minutes, twice as long as D*Hub.

3 Discussion: criteria for interpreting findings

This case study originated with the study questions *how and why does the D*Hub project engage a design community through social media tools?* The answer to *why* was to create an online Museum resource that would become the first stop for design-related information and resources for students and practitioners in the state of New South Wales. The answer to *how* was by implementing a magazine-style interface that would encourage the target community to contribute engaging content to the D*Hub portal.

*User motivation* was identified as the primary unit of analysis of the case study and an examination of the Design Hub portal found that very few explicit user motivation design elements were apparent at the interface. A review of theory above suggested that “Users must have an intrinsic motivation to
contribute” (Hoisl et al., 2007). However, little intrinsic motivation is stimulated at the D*Hub interface.

A web analytics snapshot showed that in comparison to the main PhM domain and the D*Hub portal, the Sydney Observatory blog experienced a low number of visits; a low bounce rate; and a high number of pages viewed per visit. D*Hub experienced a high bounce rate and a low number of pages viewed per visit. After two years of operation, D*Hub is still progressing towards a critical mass of user-generated content, aided by intermittent promotions such as competitions. Based on these findings, this case study indicates that user motivation should be regarded as an important factor in the design of future online community projects which require a critical mass of contributors in order to remain sustainable.

4 Conclusion
The performance of the D*Hub portal should not be measured solely on whether it has achieved a critical mass of contributors. On the contrary, the project should be judged as a successful milestone in PhM’s ongoing roll-out of social media tools. The D*Hub project was conceived in 2003-4 and its ambition to allow users to contribute comments and editorial demonstrates the adoption and implementation of a Web 2.0 philosophy well before most other major museums around the world. Furthermore, the D*Hub experience demonstrates the importance of a visible community of contributors to the success of an engagement using social media. In order to achieve this visibility, PhM is now using third-party social media tools such as Facebook to achieve its strategy of online engagement. The D*Hub project may be somewhat reminiscent of the 1980s office IT revolution, during which organisations committed considerable expense to developing database solutions in-house; only to find within the space of a few years that similar solutions could be purchased off-the-shelf. The fact that a comparable revolution is occurring even more rapidly in the social media field demonstrates the challenge of both practice and research in this area.

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References


