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Discovering the Sociability Needs of Two Types of Discussion Board Communities

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ABSTRACT

The purpose of this study is to discover the sociability needs of two types of online discussion board communities. The two types of communities investigated in this study are support communities for PhD students and support communities for patients. By investigating these two types of community's needs we can see how the purpose of the community affects its sociability needs. In the study, we derive the initial set of needs (referred to as Heuristics) from the literature and then, using questionnaires and interviews, we collect the communities' opinions. Finally, using cluster analysis we condense the findings down to sets of heuristics which online community developers can use. The emphasis in this study is on discovering what the communities want by asking community participants. The novel part of this study is the iterative way in which we collect and condense input from the community into a set of design heuristics for developers of these kinds of bulletin board-supported communities.

INTRODUCTION

An online community as defined for the purpose of this study is an Internet/network-based environment where users can exchange information and ideas, have a common purpose, abide by the same policies, and use computer software to facilitate communication [7]. The online communities we concentrated on are those with message boards as the primary means of communication. What are the factors that make some of these communities successful? Why do some succeed while many fail? Research and practice are starting to provide some explanations about the successes and failures of these communities [2].

However, this knowledge needs to be collected and presented in a concise way useful for community developers, moderators and participants. One strategy for achieving this goal is to develop guidelines for developers, on how to manage, nurture and maintain successful communities.

METHODOLOGY

Overview

Sociability heuristics that focus on social interactions were adapted from Preece's [7] list of suggested heuristics and Kim's guidelines derived from observations [4]. These sociability heuristics and guidelines were used to develop a questionnaire that was tested in Phase One of the study. In Phase Two, the heuristics identified in Phase One were iteratively tested on a set of online academic communities and a separate set of online health communities. During this process, the heuristics were tailored to address the sociability needs that were important to each of these two types of communities. Academic and health communities were chosen because they are the most numerous online, and the most crucial, since the accuracy of the information provided and the help and support provided are important to the members and therefore to the survival of the communities. These two types of communities closely resembled in make up and general purpose to the original community which was designed and maintained by the researchers. This research aims to test other types of online communities and eventually determine a general list of guidelines that are needed in the success of online communities.

In this study, the list of needs will be referred to as heuristics since we started with a list of heuristics. The intent is to ultimately develop the list of heuristics or needs, validated in this study, into guidelines for designers, managers and moderators in order to help them design and maintain successful community.

Research Design

The study was conducted in two phases. In Phase One, an online academic community was created, and it was opened to users and tested for two years. The data were extracted from questionnaires and interviews administered to the users of this community in order to test the existing set of heuristics and to identify heuristics drawn from the users' perspectives. An action research approach was adopted [1], because the users are part of the research and their opinions are directly incorporated in the results. In Phase Two the derived heuristics were iteratively tested separately on existing online academic and health communities in order to refine the list separately for these two types of communities. The iterative testing approach in Phase Two was meant to test the initial list on a series of academic or health communities, in order to validate them for the specific type of communities and in order to draw new heuristics from the users' perspectives.

Selection of Communities

In Phase One, we worked with a support community for PhD students. In Phase Two, health support and academic support communities were matched as closely as possible in terms of their use of discussion boards embedded within a Web site, and their moderation. The health communities were all communities designed to support patients and give them guidance. Each community focused on a specific illness or disorder. The academic communities were all communities of support for PhD students, where members could come for support, guidance and advice.

Phase One: Testing the Original Heuristics

The goal of Phase One was to test the existing sociability heuristics and guidelines, and to derive specific heuristics from the users' perspectives.

The derived heuristics were tested and re-tested four times on the same online community, and each time a new feature was added in order to draw new sociability heuristics. The features were added in several stages, and at each stage a questionnaire was sent and interviews were conducted in order to assess the importance of this feature on the community. Some of these added features included photos and avatars, in order to test the importance of social representation, new topics and moderation. These heuristics were then incorporated into a new questionnaire in order to test their validity. The final set of heuristics was drawn from the last questionnaire. They were clustered through factor analysis before turning them into a General Questionnaire (QG), which was then refined for each type of community. The questionnaires used a seven-point Likert scale indicating the degree of importance for each feature presented as part of the community.

Phase Two: Iterative Testing of the Heuristics

In Phase Two, an iterative approach [9] was used to refine the heuristics and test them on three online health and two online academic support communities. The testing was done simultaneously on these two sets of communities. The steps in this process were:

- QG was sent to the first community from each group.
- Interviews were conducted and coded for new potential heuristics. The new heuristics were incorporated into a new questionnaire: Questionnaire Education (QE) for academic communities and Questionnaire Health (QH) for health communities.
- The new questionnaires were sent to two different types of online communities and interviews were conducted. The process was repeated until the community stopped suggesting new questions.
- At each step, the results were statistically combined and formulated into a new questionnaire in order to retest on a new community.

After receiving the results of the questionnaires, interviews were conducted with the users who indicated that they would like to be interviewed. The interviews were designed to draw new questions to be incorporated in the next questionnaire.

- The data sets from the questionnaires were analyzed using factor analysis in order to reduce the number of questions and group them into meaningful clusters of key items.
- In the first iterative testing stage with the academic online communities, QG (general Questionnaire) yielded 335 responses, and 27 members participated in the interviews. In the second iterative stage, QA (the first academic questionnaire) yielded 159 responses and eight participants participated in interviews.
- In the first iterative testing stage of health online communities, QG yielded 75 responses, and nine members participated in interviews. In the second iterative stage, two online communities were tested and QH (the first health questionnaire) yielded 89 responses and seven participants participated in interviews [1]. Two communities were tested at this stage because the numbers of respondents to the questionnaire were not enough to be statistically significant and a second community with the same make up needed to be surveyed in order to obtain enough responses for factor analysis.
- Additionally, the questionnaires contained several open-ended questions inquiring about the users' opinions of what constitutes success and what criteria are important to them that were not mentioned in the questionnaires. The responses from these questions were combined with the interviews for analysis.
- A Cronbach's Alpha test was performed on each one of the questionnaires in order to test for internal reliability. The results ranged between 0.81 and 0.91 and lead to the conclusion that the questionnaires were reliable [1].

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The results presented in this study are from the final lists of heuristics for each type of community.

Factor Analysis

A multivariate statistical analysis using principal components with varimax rotation was chosen to build the clusters. Principal components analysis was chosen because of its accurate and meaningful results in comparison to maximum likelihood analysis [3,5], and varimax rotation is a transformation that helps in obtaining distinct clusters. The clusters in this analysis are determined by grouping conceptually related questions (items) into factors through attributing weights from each question to each of the factors [5]. The analysis yielded conceptually meaningful clusters based on the consistent answers to questions that are conceptually related [5].

In this study, SAS (Statistical Analysis Software) was used to build the clusters in both phases. SAS uses a hierarchical method of clustering. In the clustering process, first, the number of factors is determined, and then the analysis determines the individual items belonging to those clusters by attributing weights to them based on their contribution to the overall variance. With the aid of this analysis, conceptually meaningful clusters in the questionnaire can be obtained based on the consistent answers given to questions that are conceptually related [5,10].

Factor analysis is performed on the data obtained from the questionnaires in order to group the many sociability heuristics into major meaningful groups. Prior to the analysis, the number of clusters for each group needed to be determined. Several methods including variance contribution analysis, Scree Plots, and manual extraction [10], indicated that a total of eight factors for sociability clusters were optimal numbers of factors to be used for the cluster analysis. A sensitivity level of 0.40 was chosen, because established research has shown that this level of sensitivity is the most commonly used [5]. Each item was attributed to a factor, if the corresponding weight was equal to or greater than 0.40 [5,10].

FINDINGS

Academic Online Communities

The questions were taken from the final questionnaire for academic online communities for clustering. Within each cluster, meaningful subgroups were created in order to make the list of heuristics more readable. The sub-groups were created by the researchers and were not the result of factor analysis. This sub-grouping was necessary in order to define meaningful groups within those factors that are relatively broader in range. The eight sociability clusters are presented in Table 1 together with the key items for each.

Health Online Communities

All items are taken from the final questionnaire for clustering. They are presented in Table 2. The final sociability list for online health communities that was validated through clustering includes eight heuristics. While there is some overlap with the sociability heuristics that emerged for the education communities, as expected the differences express the different sociability needs in each type of the two communities tested.

There are only two items that became a part of factors they conceptually did not belong to. In the academic heuristics "strong ties" clustered with items on social representation. However, one possible reason for this type of clustering can be the low response rate for this question. In majority, the members felt that strong ties were not needed, and many marked the "not applicable" option for this question, which could have affected the results. Additionally "no fee for joining" clustered with the trust item, since many of the members indicated in interviews that a fee to join indicates that the community is a business venture and not created for their own benefit.

DISCUSSION

Sociability guidelines in online communities have been limited to ideas on how to design and maintain communities, derived from experiences

Table 1. Heuristics for Academic Online Communities

Sociability clusters: 8 factors, 0.40 sensitivity
Members, Community and Purpose
Purpose
Purpose clearly stated
Purpose changes and evolves with the members' needs
Purpose relevant to members' lives
Discussions
Topics of discussions are interesting
Topics of discussions represent different views
Moderators active in discussions only to keep hostility out
New topics introduced regularly
Natural and active discussions
Deep discussions
Being able to ask questions in a safe environment
Interactions similar to face to face interactions
Community's Commitment
Community adapts and changes to fit the needs of the group
Community keeps users interested
Community able to attract new members
Information on Web site updated regularly
Members' Commitment
Members should visit the community frequently
Members committed to the success of the community
Connections
Members in control of discussions not moderators
Need to feel a sense of belonging to the online community
Need to feel connected to others
Policies
Privacy of personal information
Clear policies
Prominently displayed policies
Policies being enforced
Web site contains valuable information and links
Feedback and Social identity
Feedback
Feedback from moderator not necessary
Feedback from members very important
Social Identity
Members should have a user profile
Members should create a social identity
Members should have a consistent identity
Social Representation
Need a strong leader for the community
No need to have a photo of users or avatar in the discussion board area
Strong ties present between members not important
Support
Weak ties between members is important
Discussions are light depending on topic
Information
Information provided on the Web site approved by experts
Users' responses rated for accuracy
Moderators e-mail announcements about new topics to members
Participation
Community should reach out to non-participants
Members should participate in discussions when necessary
Members should be allowed to lurk without posting if they choose
Trust
No fee for joining
Need to be able to trust the information given on the Web site

Table 2. Heuristics for Health Online Communities

Sociability clusters: 8 factors, 0.40 sensitivity
Members and Community
Discussions
New topics introduced regularly
Interactions similar to face to face interactions
Natural and active discussions
Deep or light discussions needed depending on topic
Community's Commitment
Community keeps users interested
Community able to attract new members
Information on the Web site updated regularly
Community should reach out to lurkers
Being able to ask questions in a safe environment
Members in control of discussions not moderators
Members' Commitment
Members should visit the community frequently
Members committed to the success of the community
Members should participate in discussions when necessary
Reading messages without posting should be allowed
Connections
Strong ties present between members not important
Weak ties present between members is important
Need to feel connected to others
Policies and Purpose
Policies
Community has strict rules of behavior
Feedback from other members is important
Clear policies
Prominently displayed policies
Policies being enforced
Web site contains valuable information and links
Purpose
Purpose clearly stated
Purpose relevant to members' lives
Social Representation
Purpose changes and evolves with the community
Putting one's photograph or avatar on the board not important
Feeling a sense of belonging
Community adapts and changes to fit the needs of the group
Empathy and Support
Password needed to access the community
Need to feel support
Need to feel empathy
Need a caring atmosphere
Members should have user profiles
Members should have a consistent identity
Trust and Privacy
Discussions being positive
Trust that the medical information provided is not shared with others
Trust the information provided
Privacy of my medical information
Feedback
Need to share experience with others
Feedback from moderators not necessary
Moderators are active in the discussions only to guard against flaming
Interesting Topics
Topics of discussions are interesting and helpful
Information
Information provided by moderators and administrators is accurate

and observations as stated by Kim [4]. This research aims to determine guidelines that are derived from the users' perspectives that will guide the moderators, developers, and designers on how to design and maintain successful communities.

The heuristics or needs had a few variations between the two communities as expected. The needs that are unique to online academic communities deal with different views represented in the discussions, including having a strong leader for the community, using a rating system for members' responses, and receiving e-mail notices about interesting topics. The needs that are unique to online health communities deal with the issues of support, empathy, having a caring atmosphere, sharing experiences with others, and privacy of medical information. The need for empathy and support in online health communities has been reported from other studies [6,8]. As expected, the members of all three health online communities expressed the need for support from other members and a lesser need for accurate medical information. They also wanted their communities to be password protected in order to deter visitors who are not really interested in the community. They expressed distress when the site was down; many wanted the community to be available 24/7. Most importantly, they needed a positive atmosphere where they are able to ask any question regardless of how private it is. In interviews, many members indicated that they used fictitious names in order to guard their privacy.

The members of the academic communities still needed support, but their needs were different and more concerned with the accuracy of the information given by site administrators since many used it as a guide in their academic work. However, many members noted in interviews that they are very careful about the information provided by the site administrators at first, but once the site gains credibility their trust increases. Trust in other members is more specific, it involves longevity, accuracy of information given and maintenance of one identity. The members that have been on the site the longest, and have proven that they provide accurate information, are trusted more than others. Members who switch identity will never be able to establish credibility since they are not known to others long enough to gain their trust.

CONCLUSION

The unique contribution of this study is that the heuristics are drawn from the users' suggestions about what they feel is important. The heuristics were *different* for the two types of communities tested which was expected since academic student support community members have drastically different needs and expectations compared to the members of health support communities.

The health support communities have a stronger emphasis on support and empathy. They also want to be able to trust that their personal

medical information is private. This was a surprising finding since all the medical communities are open to anyone to join. They just have to register. Some users, in interviews, indicated that they knew that information revealed in online discussions is far from private, but many still used their true identity. The concern is that some members may develop an unexpectedly high level of trust in other community members since sharing the same illness may result in a higher level of bonding. This is potentially alarming because people who so dedicatedly trust in their health communities may give out highly sensitive information, which can become public. Further research is needed to explore the relationship between online trust and disclosure of sensitive information so that proper pointers can be given to people regarding what or whom to trust online.

This study has provided a set of validated heuristics for two types of communities. While a large number of issues have been explored, future research is needed to test the lists with expert evaluators, and to turn them into guidelines for developers.

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