Predicting Social Influence and Project Influence in Online Communities of Creators

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Abstract: This paper introduces Online Communities of Creators, the subset of social networking sites in which the focus is sharing, developing and understanding personal creations. It proposes that two kinds of influence are important in these communities: social influence and project influence. Using multiple linear regressions the factors that predict each type of influence were identified for one Online Community of Creators called the Scratch Community web site.

Introduction

As more of our time is spent online, more opportunities for learning and creating are available in virtual spaces. The sites that offer the richest communities engage participants in a range of ways. These sites may support establishing an online identity, making small talk that leads to common ground, developing a dialogue about personal creations, and presenting, trying-out and critiquing projects.

In this paper I define a subset of SNS called *Online Communities of Creators* (OCOCs). OCOCs are the online communities in which the core activity is sharing personal creations. In these communities, a network of people is brought together by the projects they create and share. These sites provide features that emphasize:

- the sharing their own original creations (such as photographs, music, writing, or computer programs);
- the discussion of one another's work;
- the association of particular contributions with the people who make them.

When members post projects, they reveal themselves and create a public self for others to reflect upon. Thus, they are conscious of what they share, the attention it might garner, and how they hope others will react. To be accepted by their community, they develop relevant skills and perspectives that stimulate the community. Through their public persona and supported by their creations, they build online relationships with other members.

Online communities of creators must find a balance between supporting the social system and project sharing. If the design and use of the community focuses too much on the social system and not enough on projects, it risks losing its core mission. If the community focuses upon the projects without allowing for personal recognition and social interaction, it can seem a dry, undesirable place. In a community in which people are making different kinds of contributions, understanding the factors that bring these contributions recognition is also important.

One way to approach understanding influence in OCOCs is to examine their most important features, specifically, the social system and the original creations. I propose that in OCOC two kinds of influence are key (Sylvan, 2007). The first, *social influence*, is how much a member is a social bridge between otherwise unconnected members. Social influence can be measured by betweenness centrality. Betweenness centrality is defined as how much a particular member is part of the shortest path between two other members in a given community (Brandes, 2001). The second, *project influence*, is a measure of the degree to which the community recognizes members' work. Members who exhibit this trait are influential because of the work they create. Project influence can be defined as how much a particular member's work is cited by other members.

The Current Investigation

This paper investigates an Online Community of Creators called the Scratch Online Community (Monroy-Hernandez & Resnick, 2008). Scratch is a visual programming environment that lets users create their own animations, games, and interactive art (Maloney et al, 2008). To program in Scratch, users run the software locally on their machines. Once their project is ready, they can upload it to the Scratch Online Community.

This data was gathered from February to June 2007. During this time Scratch had over 16,000 users who created over 10,000 projects. Members' mean age was 25.61 and fifty-two percent report they were 21 or younger. Twenty-nine percent of users described themselves as female. Forty-six percent of were from the United States. (For greater description of methods and sample, see Sylvan, 2010).

Results

Social Influence

In the Scratch Online Community members can request to be listed as each other's friends on their profile pages. In the current multiple linear regression social influence was measured by members' betweenness centrality in this

friendship network. This means that people who commonly are the shortest path between other members in the network would have higher social influence than those who rarely acted as bridges.

Betweenness centrality values in the friendship network were regressed on four factors: number of comments made, number of galleries the user participated in, number of "love-its" received, and number of tags added to people's projects. These four predictors accounted for over one-third of the variance in the betweenness values (R^2 = .37), which was highly significant, $F(5050) = 755.01$, $p<.0001$. All of the relationships were positive ones, except for tagging, which was a negative relationship. All measures demonstrated significant effects on the betweenness centrality of the friendship network. Two factors had the most sizable impacts participating in galleries (T=26.65) and writing comments (T=29.42) while the other effects were smaller.

Project Influence

In the Scratch Online Community people can run other people's projects in the browser, but to see how they are built, they must download the source code. When someone downloads another person's work in this community, they are likely to be interested in the inner workings of the project. As a result, the number of times someone's work is downloaded is used to measure of project influence in this community.

Project download counts were regressed on eight factors: number of friends, number of comments, number of times a user's project was featured, days since first project, days since last project, number of projects, date the user joined, and date of last login. These eight predictors accounted for a little more than half of the variance in the project influence values (R^2 = .53), which was significant, $F(2781) = 392.73$, $p<.0001$. All measures demonstrated significant effects on project download counts. By far the biggest predictor of having one's project downloaded was being featured by administrators (T=38.30).

Discussion

When the variables that were predictive of project influence were added to the social influence regression, none, except number of comments, was found to predict social influence. Additionally when the variables that were predictive of social influence were added to the project influence regression, none, except number of comments, was found to be predictive. This evidence suggests that these two types of influence may be distinct constructs. On the site comments are used for both social and project-related reasons. Future work will discriminate between different kinds of comments.

Conclusions

This paper introduces Online Communities of Creators, the subset of social networking sites in which the focus is sharing, developing and understanding personal creations. It proposes that two kinds of influence are important in these communities: social influence and project influence. In the Scratch Community web site social influence was predicted in a multiple linear regression by number of comments made, number of galleries the user participated in, number of "love-its" received, and number of tags added to people's projects. Project influence was predicted in a multiple linear regression by number of friends, number of comments, number of times a user's project was featured, days since first project, days since last project, number of projects, date the user joined, and date of last login. Other than number of comments, the factors that predicted these two kinds of influence were distinct from one another. Thus, in this community, these two concepts seem to be distinct constructs. The current work provides concepts and measures that, with further study, may be applicable, and valuable, to understanding and designing other communities.

References

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