How effective is gamification in promoting user engagement?

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Introduction

Deterding et al. (2011) define "*gamification* as the use of game design elements in non-game contexts." Stack Overflow is a question and answer website designed for programmers. Stack Overflow is gamified as follows:

1. A user earns reputation points when another user votes on her posts (5 points when a questions is voted up, 10 points when an answer is voted up, 15 points when an answer is accepted, and 2 points when an edit is approved).
2. As a user earns reputation points she unlocks privileges on the site. For instance, a user must have at least 15 reputation points to vote up a question or answer. A list of all privileges is available here.
3. Users are awarded badges for special achievements. One receives the "Informed" badge by reading the entire tour page. A list of badges is available here.

Grant and Betts (2013) present empirical evidence that three of the badges awarded for various editing accomplishments are effective in encouraging users to make more edits in the two months preceding receipt of the badge compared to the two months after receiving the badge. This paper aims to build upon the contributions of Grant and Betts (2013) by:

1. Using regression discontinuity to measure the causal impact of badges on user activity (questions, answers, and edits).[1]

[1] Lee and Lemieux (2010) provide an excellent guide for applying regression discontinuity designs in empirical research.

2. Applying the same methodology to measure the causal impact of privileges on user activity.

3. Comparing the estimated effects of badges and privileges will help us understand which components of Stack Overflow's gamification are most effective at promoting user engagement.

Data

Describe the data.

Let's look at the Commentator badge to see how it affects comments, questions, and answers.

Results

For a number of badges users have complete control over the assignment variable. For privileges based on points, users do not have perfect control. Can I get a historical record of reputation points?

It looks like I'll have to use the API to get some record of reputation. Maybe I'll have to use this for a subsample of users with specific privileges. That could make things a bit faster.

Privileges are based on your current reputation. Unfortunately Stack Exchange does not want to share exact reputation data

Looking at the three endpoints for getting reputation data here, we can get some seriously flawed public data that won't work well for determining priviliges or we'll have to authenticate users to get their full history. That doesn't seem feasible.

http://stackapps.com/questions/4670/users-id-and-users-id-reputation-disagree-over-2-accept-answer-bonuses/ http://stackapps.com/questions/3320/reputation-api-to-display-a-reputation-history/ http://stackapps.com/questions/2957/is-it-possible-to-get-daily-reputation-change-for-a-user-via-the-api/

http://api.stackexchange.com/docs/types/reputation-history

what reputation events are private?

I appreciate the API has three methods for retrieving a user's reputation history:

1. /users/{id}/reputation-history/full requires the user to authorize access and returns a complete history of reputation changes.

2. /users/{ids}/reputation-history returns all public changes in a user's reputation.

3. /users/{ids}/reputation does some scrubbing of the reputation change events to keep private events private, but gives a "reasonable display of reputation trends."

The third option will be best for a fuzzy RD design.

Which reputation events are private?

I want to recreate a user's reputation history using the API. I understand that the public version of this data has been scrubbed to hide private reputation events, but I haven't been able to find a definitive list of private reputation events. Is there a list

http://stackoverflow.com/help/whats-reputation

I can compute a rough reputation number, measurement error as motivation for fuzzy RD design. I will use this API endpoint /users/{ids}/reputation.

Conclusion

References

Deterding, Sebastian, Dan Dixon, Rilla Khaled, and Lennart Nacke. 2011. "From Game Design Elements to Gamefulness: Defining 'Gamification'." In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9–15. MindTrek '11. New York, NY, USA: ACM. doi:10.1145/2181037.2181040.

Grant, S., and B. Betts. 2013. "Encouraging User Behaviour with Achievements: An Empirical Study." In *2013 10th IEEE Working Conference on Mining Software Repositories (MSR)*, 65–68. doi:10.1109/MSR.2013.6624007.

Lee, David S, and Thomas Lemieux. 2010. "Regression Discontinuity Designs in Economics." *Journal of Economic Literature* 48 (2): 281–355. doi:10.1257/jel.48.2.281.