Learner Generated Content

Fostering and Valuing User Generated Content in eLearning using Social Feedback

Gabriel Reimers

Quality and Usability Lab, Technische Universität Berlin, Ernst-Reuter-Platz 7, 10587 Berlin, Germany

1 RESEARCH PROBLEM

User Generated Content (UGC) is any form of content that is created by the users themselves in order to make it available to others, usually on an online platform. When UGC is used in a learning context and learning material is created by students or learners in general, we talk about Learner Generated Content (LGC) as a subset of User Generated Content.

A very common form of LGC are Wikis, but the concept is not limited to text generation. The term applies to creative works on all media. For example creating videos for YouTube, virtual worlds for Minecraft or sharing pictures on Flickr, all are forms of Lerner Generated Content when performed in an educational context.

Having learners create and share content can be advantageous in several cases:

- creation of large collections of content
- peer assessment of content
- motivation of learners

When applying the concepts of User Generated Content, questions in several areas arise:

1.1 Acceptance of LGC

As UGC lives from its users, it is crucial to get high acceptance by the users. That means, the platform with learner generated content must be accepted among learners as a valuable source for material, and a critical mass of learners must be willing to create and contribute content to the platform.
So the questions are:

- How can users be motivated to actively contribute LGC?
- How big is the critical mass of contributors?
- What criteria must be fulfilled so users consider a LGC platform as valuable?

1.2 Measuring Quality

Having lots of users create content is only half the battle. A learner browsing the repository of learner generated content must be able to quickly judge which contributions are valuable to her and which are not. As there is no central quality control, a community based system is needed to sort, categorize and rate each content contribution.
Problems are:

- What do learners consider relevant criteria for quality?
- What forms of rating systems are possible and accepted by users?
- How do LGC ratings compare to evaluation by an expert/teacher?

1.3 The Role of Social Feedback

Some UGC platforms, like Wikis, have no kind of reward or point system. Others are strongly gamified, like Waze[1], where every contributor is awarded points by the system.
StackExchange.com[2] is also gamified, but points are not received from the system but from other users. As users rate content, the creators of that content receive or lose points depending on the rating.

The author believes that such a system of peer assessment can not only be used to efficiently rate content, but is also a strong factor of motivation. Getting social feedback by other users is a completely different experience than contributing without recognition (as in Wikis) or receiving automatic, and often meaningless, rewards by the system.

The Self Determination Theory (SDT), developed by Deci and Ryan, points out three important requirements for intrinsic motivation: *Autonomy*, *Competency* and *Relatedness*. (Deci and Ryan, 2000) User

---

[1] https://www.waze.com
[2] http://stackexchange.com

3

Generated Content appeals to autonomy as users are free in how, what, when and whether they create content. It can also easily be used to foster competency with any kind of rating system together with user profiles displaying progress and level of contribution. Now, adding direct social feedback and peer assessment not only improves the accuracy of the rating for the competency, but also adds aspects of a social network. As long as users are not completely anonymous, that adds the dimension of relatedness to LGC and might increase intrinsic motivation of users. However, it might well be that users perceive social feedback as social pressure, or that social feedback actually takes effect as extrinsic motivation, undermining intrinsic motivating.

Considering social feedback in learner generated content leads to the following questions:

- How do users value social feedback in comparison to system feedback?
- How need social feedback systems be balanced to prevent abuse like spamming or bullying?
- Does social feedback yield higher motivation than regular systems?
- Under what conditions do users consider social feedback as neutral measure of their competency, and when do they perceive it as controlling?

1.4 Effect on Learning Success

Collection and sharing of knowledge and content is probably in most cases the driving reason to use concepts of Learner Generated Content. However, having a LGC platform is only useful if learners benefit from it. It is likely that actively creating content results in better learning success. Making content available to others should also help those consumers learn more easily.

These assumptions remain to be proven, and the following questions arise:

- Does creating content yield higher learning success?
- Can the accessibility of LGC improve learning efficiency?
- Can social feedback make learners adjust and correct content they created?

2 OUTLINE OF OBJECTIVES

2.1 User Studies

The first step is to develop a questionnaire that can

measure a users attitude towards a LGC in general and towards specific platforms. That should cover aspects like why and how often the platform is used, the context in which the user is set, the willingness to create and share content and especially the effect of social connection and feedback on that platform.

The questionnaires will be based on interviews led with users and on existing scales and concepts from the literature like the Self Determination Theory.

2.2 Implementation

Off-the-shelf Wiki and Question & Answer (Q&A) systems shall be set up and provided to students of the courses supervised by the author. This is a cheap and fast approach to collect impressions and questionnaire results from students on Learner Generated Content.

However, it is important to not only investigate existing Learning Generated Content platforms. Testing of new concepts and detailed tracking of users is only possible when full access to the technical and editorial components of the platform is guaranteed. Accordingly, two platforms for LGC are to be developed within the context of this thesis.

One is *PaperMesh*, a platform allowing students to upload and share scientific works they created during their studies. For instance a student can upload her bachelor thesis, seminar presentations or project reports. These might be valuable, citable sources for other students. A reliable rating and feedback system will be essential for that platform.

The other planned project, *PearRank*, is an LGC platform which can be used in context of courses to peer review tasks. As a course instructor, one can create rooms for specific topics, which are only accessible to the (invited) course members. Within such a room, students can post results of assignments in form of pictures, videos or text. Any submission is visible to all other participants, who are encouraged to rate their peers' submissions. This results in a ranking of the works and small competition. The platform can be used for open, creative assignments. For example, students could be asked to take pictures of wild animals in their neighborhood and upload it to the LGC platform. The contribution with the best peer-rating can then be awarded a little price or bonus points. The social feedback is expected to increase participation and also have students retouch their submission if it is not rated high enough.

2.3 Evaluation

Using the results and tools obtained during the user studies, continuous iterative evaluation and adjust-

ment of the created platforms will be conducted.

The goal is to compare the effect of different feedback approaches on motivation and participation on the platforms as well as measuring the effect on learning outcome of different LGC concepts.

3 STAGE OF THE RESEARCH

Currently, the development of appropriate questionnaires is ongoing. That includes performing interviews with representative users and building a model of important factors influencing acceptance, motivation, contribution, quality and learning effect of LGC.

Development of PaperMesh, the LGC platform for students to share scientific works, has started in winter. An early beta version is expected for summer.

Also, a cooperation with the Berlin based startup *qLearning*[3] has been established. The company is offering a learning app, targeted at university students, and wants to shift content creation to a learner generated model. The author consults in performing user studies and will be granted access to study results and usage data in return.

4 STATE OF THE ART

4.1 LGC Platforms

In classrooms and online courses, wikis and blogs are a very common form of Learner Generated Content. They can be used as a sandbox in which students summarize what they learned or create articles on supplemental topics. Yet, wikis offer hardly any feedback to contributors and don't offer mechanisms to track quality of content. Blogs usually have a comments section but are very unidirectional.

To compare acceptance of Wikis with that of platforms applying social feedback, the author will setup off-the-shelf wikis for courses. Usage of these and of other existing wikis will be evaluated as a baseline.

StackExchange.com is a collection of several question and answer (Q&A) sites on topics such as programming (stackoverflow.com), languages, physics, math, cooking and many more. Questions and answers are user generated, and a peer rating system is used to rank questions and answers by quality. Users build up reputation points based on these ratings and can follow a gamified path of levels and badges awarded for their engagement. The StackExchange sites are very well implemented examples of

how social feedback can be used to motivate users and rank content by user voting.

While content is user generated, the Q&A technology behind this platform is held by stack exchange inc. and is not publicly available. Accordingly this platform cannot be customized or be used in closed environments like classrooms. StackExchange platforms can be used in institutional learning as a source of information similar to Wikipedia. They are not primarily designed or generally considered as eLearning tools, though. Within this work, it is planned to test the applicability of the Open Source Question Answer system (*OSQA*) in a course context. OSQA is an open, but no longer maintained, reimplementation of the StackExchange platform. It shall be measured if social feedback in such a Q&A system yields better acceptance or engagement than wikis.

On *Graasp.eu*[4] users can create private rooms for their course or group. Within these rooms users publish text, images, videos or links and can rate other's content. It is intended for use in education contexts, and its creators of EPFL Lausanne describe it as "a social media platform, to setup a peer assessment activity". Graasp lacks any form of user profiles or gamification and can be considered a content sharing platform with ratings.

As part of this thesis the peer ranking platform PearRank will be created, which will offer a similar room based system as Graasp. In contrast to Graasp, PearRank will put the social interaction and ranking in focus. Graasp is more like a portfolio platform on which users collect and share complementary information. PearRank shall be more competitive as all users upload similar content in response to a specific task and vote to select the best.

4.2 Research

Wikis have been used and evaluated in various learning contexts and have become and essential part of learning platforms such as Moodle. Some small studies have been done on the use of Wikis in higher education courses, reporting positive feedback from students, higher engagement and more social interaction among participants. (Coutinho and Bottentuit Junior, 2007) (Wheeler et al., 2008)

Others argue, in these studies participation was only achieved by pressure of points or grades, and that students would not contribute voluntarily. (Ebner et al., 2008)

Hardly any data is available on what students who freely create content in Wikis or Blogs, or on how those who don't, can be motivated.

---

[3]http://qlearning.de

[4]http://graasp.eu

Q&A platforms, especially StackExchange, have been researched, too.

At Trinity College Dublin the, now offline, *explore.su* analysing tool has been developed. It visualizes user demographics, social interaction and editing behavior of the SuperUser.com platform (a child site of the StackExchange ecosystem, for computer enthusiasts and power users). (McAuley et al., 2012)

Anderson et. al. conducted a detailed big data analysis on the complete usage data of the StackOverflow.com platform and gave insights on how the process of question answering takes place and on how rating of questions and answers can be predicted. (Anderson et al., 2012)

Both projects conclude that users with higher reputation are more active and that distribution of reputation resembles a pyramid with few very reputable users and many rather inactive users.

A very interesting insight into the effect of social feedback on user behavior is given in (Cheng et al., 2014). Commenting on four major news communities was investigated, and it was found that users who received negative voting on their contributions (comments) produced more and worse comments afterwards. Commentors who received positive feedback did not change their behavior, whereas those who did not receive any feedback contributed less afterwards.

It remains to be shown that this pattern can also emerge on platforms that are more knowledge driven and not as emotional and political as news commenting is.

5 METHODOLOGY

To obtain real world data, four LGC platforms will be analyzed in detail. That is the custom peer rating platform *PearRank*, the student paper sharing platform *PaperMesh*, off-the-shelf wikis and Q&A, and the learning app created by the *qLearning* startup.

For each of these platforms users will be surveyed with questionnaires about their usage of LGC and why they create content or not. Log data will be collected to neutrally measure participation and behavior. Where feasible learning outcome will be measured on students of TU Berlin in parallel to regular student assessment. Additionally, learners will be asked to provide grades or subjective impressions of their learning success.

While it would be desirable to see positive effects of LGC combined with social feedback on learning outcome and motivation, it certainly is not the holy grail of learning. Therefore, the null hypotheses remains that LGC has no effect on learning outcome,

and social feedback has no effect on motivation or participation. It might well be that other factors, such as design, ease of use or personal preferences have much stronger influence on how users interact with LGC.

6 EXPECTED OUTCOME

The thesis will provide an overview of existing concepts for Learner Generated Content. A selection of these concepts will be analyzed on how well they are accepted by users, how correctly their content is categorized and rated, and what effect they have on learners motivation and success.

As a result, certain concepts might proof more effective than others and factors having strong influence on acceptance and motivation can be isolated.

A special focus will be put on the effect of social feedback in terms of peer assessment, voting, rating or 'liking'. It is expected to positively affect users' willingness to contribute content and increase their intrinsic motivation to learn the topics covered by the LGC platform. It shall also be shown that user ratings — in any form — are an ideal tool to measure quality of learner generated content and can be used to rank search results on LGC platforms.

Motivation and reasoning of LGC users will be explored. Factors making users contribute will be identified, as well as factors that hold users back from participating.

It will be investigated if there are any definable groups of users that are more willing to contribute content than others. The author assumes that users of UGC platforms can be characterized by their motivation to produce or consume content and their disposition to be social or altruistic. If users can clearly be categorized, LGC platforms will be able to address users more concretely.

A toolset of questionnaires and metrics will be developed to measure motivation, participation and learning success on LGC platforms. This toolset shall be as platform independent as possible so it can be used to by others to investigate different platforms as well.

While several aspects influencing LGC acceptance and success will be uncovered within this thesis, many more will remain or arise. An important goal of this work is to be a basis for future research to build upon.

REFERENCES

Anderson, A., Huttenlocher, D., Kleinberg, J., and Leskovec, J. (2012). Discovering value from community activity on focused question answering sites: a case study of stack overflow. In *Proceedings of the 18th ACM SIGKDD international conference on Knowledge discovery and data mining*, pages 850–858. ACM.

Cheng, J., Danescu-Niculescu-Mizil, C., and Leskovec, J. (2014). How community feedback shapes user behavior. *arXiv preprint arXiv:1405.1429*.

Coutinho, C. P. and Bottentuit Junior, J. B. (2007). Collaborative learning using wiki: A pilot study with master students in educational technology in portugal.

Deci, E. L. and Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, 11(4):227–268.

Ebner, M., Kickmeier-Rust, M., and Holzinger, A. (2008). Utilizing wiki-systems in higher education classes: A chance for universal access? *Universal Access in the Information Society*, 7(4):199–207.

McAuley, J., O'Connor, A., and Lewis, D. (2012). Exploring reflection in online communities. In *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge*, pages 102–110. ACM.

Wheeler, S., Yeomans, P., and Wheeler, D. (2008). The good, the bad and the wiki: Evaluating student-generated content for collaborative learning. *British journal of educational technology*, 39(6):987–995.