

Feedback Mechanisms and their Impact on Motivation to Contribute to Wikis in Higher Education

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ABSTRACT

The success of Wikis depends very strongly on the user participation and the willingness to edit. In this paper we examine within an experiment which influence different kinds of feedback have on the motivation to edit a Wiki page. The results indicate a positive impact of feedback on the willingness to participate in the Wiki for any of the used feedback mechanisms.

Categories and Subject Descriptors

K.3.1 [Computer Uses in Education]: Collaborative learning.

General Terms

Design, Experimentation, Human Factors, Verification.

Keywords

Motivation, Feedback, Course Wiki, Experiment.

1. INTRODUCTION

It is an important part of students' preparation for pre and post processing of lectures at universities, to talk about the course's topics and exchanging knowledge or opinions. In this context, a course Wiki can be a helpful tool to support students [2]. But the lack of contributions is a common problem when using Wikis in higher education [2], [4]. Monetary incentives cannot be applied and are not helpful in this setting [5]. A non-monetary way to raise contribution is a feedback mechanism [3]. In this paper, we will focus on the following question: What is the impact of feedback mechanisms on the willingness to contribute to a Wiki in higher education? To answer this question we have conducted a field experiment with students contributing to a course wiki.

2. CONDITIONS OF THE FIELD EXPERIMENT

This paper presents the results of a field experiment conducted at the Karlsruhe Institute of Technology (KIT). The aim of the experiment was first to investigate if neutral system feedback provided by feedback mechanisms leads to an increase in the number of contributions in the course Wiki.

2.1 Description of the Lecture

In order to enable students who attended the lecture „Introduction to the Economics of Information“ to exchange their lecture notes, a course Wiki was provided. The aim of the course Wiki is to increase the quality of the students' lecture notes and, subsequently, their learning success. The students' willingness to take notes during the classes that go beyond the provided learning material and to summarize the lecturer's verbal explanations is therefore fundamental. It is important to remark, that the usage of the course Wiki is not mandatory. Typically, the Wiki usage includes three activities: Creating a Wiki page (i.e. sharing personal lecture notes), revising and rewriting existing content and reading existing content created by others. The quality of the revision and the completion of the lecture notes was rated on an individual basis and awarded with bonus points for the final exam.

2.2 The Feedback Mechanisms

We use four different feedback mechanisms in six experimental conditions which are assumed to lead to an increased and repeated contribution rate [3]: Gratitude, Historical Reminder and Relative Ranking. In addition to these three feedback mechanisms, we also examined a fourth feedback mechanism: „social ranking“ is a ranking within a group of users who created a similar number of contributions. Every feedback mechanism was displayed once besides the content menu, any time the user edited and saved a Wiki page and is not shown again when refreshing the page or by pressing the back-button of the browser. The feedback was designed regarding color and appearance in such a way, that users perceived the feedback item as an original element of the Wiki page. We are interested in social ranking, because we believe that the information about individuals with a similar ranking, and therefore same amount of contributions, leads to an increase in social competition, and therefore, positively impacts the motivation to contribute. This is in contrast to an usually applied top ranking list, where the top positions often cannot be achieved by most of the participants. Such an effect may be perceived as that one's own influence on the ranking is insignificant and as a result one's own actions may be perceived as powerless in terms of getting in the top rank. In contrast, the social ranking might induce the impression of closeness and relevance. Condition number five is a random display of one of the four feedback types, to analyze whether or not the type of our used feedback mechanisms differ or not. Finally a control group (CG) without feedback concludes the six experimental conditions. Refreshing, re-opening or accidentally saving a page did not trigger a display of a feedback message, i.e. the feedback is uniquely displayed in situations in which participants have actively contributed content to the Wiki.

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3. METHOD OF THE EXPERIMENT

The relevant survey period for this study was between October 21st, 2009 and March 19th, 2010. During this period, students could register for the course Wiki and actively participate. After this period, the course Wiki was still available, but students could not earn bonus points. An overall number of 72 students registered for the course Wiki of which 37 students created one or more entries. The average age of the students is 23.5 years, with a standard deviation of exactly one year. Genders were unequally distributed with only nine female students (24%) and 28 male students (76%). When registering for the course Wiki, each student was randomly assigned permanently to one of the six experimental conditions. The experimental design allows an evaluation in different ways. The outlined five different experimental conditions can be tested against the control condition and a two-group-design consisting of the control condition versus an aggregated experimental condition including all feedback mechanisms.

4. RESULTS

The following section explains the descriptive and inferential analysis of the field study.

4.1 Descriptive Analysis

An overall number of 782 edits was carried out during the five months out of which 141 edits cannot be considered since the Wiki page was saved without prior editing activities or the time between two edits on the same Wiki page was less than thirty seconds. From an experimental and methodological perspective, these 141 edits must not be considered since this would cause a distortion of the results. Furthermore, no feedback was shown in these two outlined cases. Therefore, the remaining 641 edits are taken into account for the statistical analysis. Table 1 shows the descriptive results for the feedback mechanisms.

Table 1. Descriptive Results per feedback type with number of users, mean and standard deviation of the entries

Feedback type	N	M	SD
Control group (CG) without feedback	9	8.22	6.48
„Thank you.“	4	10.00	10.13
Historical Reminder	6	23.83	34.40
Relative Ranking	5	20.20	28.05
Social Ranking	7	28.14	24.75
Random Feedback	6	14.33	12.57
Feedback Group only	28	20.25	23.56
Total	37	17.32	21.28

The results show that the students of the control group have created eight entries on average. In contrast, students who received the social ranking feedback created by far the highest number of entries on average, with almost 28 contributions per user.

4.2 Inferential Analysis

We apply an inferential analysis and compare the results with the control group with a t-test for independent samples.

Table 2. Inferential results with indications of the between-group-comparisons, number participants, t- and p-values

between-group comparison	N	T	p
CG vs. „Thank you.“	13	0.39	0.35
CG vs. Historical Reminder	15	1.35	0.10
CG vs. Relative Ranking	14	1.26	0.12
CG vs. Social Ranking	16	2.34*	0.02
CG vs. Random Feedback	15	1.25	0.12
CG vs. whole Feedback Group	37	1.50	0.07

Except for the social ranking, all feedback mechanisms fail to pass the statistical significance of 5%, but most of them very close.

5. CONCLUSION

During the five months of the field study, all groups who received feedback created more entries than the control group which did not receive any feedback. The highest number of contributions was created by the statistically significant group who received the social ranking feedback, with more than triple the edits of the control group. It is to be critically remarked that personality traits were ignored in all the cited studies and that this is considered a gap in actual research [6]. Moreover, the feedback should fit to the individual's personality, since improper feedback may have undesired effects such as non-participation [1]. Further research should focus on personality traits and feedback mechanisms.

6. ACKNOWLEDGMENTS

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