Improving conversations around controversial issues with Gamification implemented

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Abstract: In this paper, we examine a method that introduces game mechanics into online conversations around controversial issues, aiming at investigating the influence of Gamification on these conversations. We examine the changes in motivation and engagement of users participating in conversations with Gamification introduced, as well as the effectiveness of conversations that Gamification brings. We observe positive influence on motivation and effectiveness but little, as well as slightly negative effect on engagement, indicating that this method still needs improvement, as well as that Gamification has potential to promote better conversations on controversial issues.

1. Introduction

People have been holding different positions, arguing with each other about controversial social issues around the world. However recently, due to the interaction with social media and 'disinformation' such as fake news or political slanted information, the phenomenon of political polarization becomes more severe [1][2][3]. Moreover, as the internet technology develops these days, communication becomes much easier than before, which also results in more trolling and irrational behaviors happening [4]; information is conveyed easier and faster than ever, which doesn't lead human to mutual understanding but create countless 'echo-chambers' [1][3]. We afraid that these factors above are tearing the society apart [2].

To solve this problem, several projects were found to match people with different opinions and have them smoothly communicate face to face, aiming at promoting mutual understanding between citizens. These projects include Hi From The Other Sides (in the US), My Country Talks (from Germany), etc [5][6][7].

Inspired by these projects, we started thinking that whether the solution above is also realizable in online situations. In these projects, participants discuss with each other in person, and there is a host controlling the situation, which help the conversations move smoothly and effectively. In online situations however, this is difficult to achieve since participants are not facing each other in person, and there is no host controlling the conversation.

Here we consider Gamification as a potential mechanics to help motivate the participants and control the flow of the online conversation around controversial issues. Gamification, defined as implemented game design elements in the design of non-game systems [8], has become a popular research topic these days.

In this paper, we propose a method to introduce Gamification into online conversation around controversial issues. The purpose is to investigate the influence of Gamification on participants' motivation, engagement, and the conversations' effectiveness, defined by how much understanding a participant has about others' thought, as well as how much a participant changes in his/her mind.

We conducted an experiment with our method, finding that our method causes a slightly negative effect on engagement, indicating that our method still needs improvement; meanwhile a slightly positive influence is also observed with regard to motivation and effectiveness, proving the potential of Gamification on improving conversations on controversial issues.

The rest of the paper is organized as follows: Section 2 introduces related works and how our work is related to or different from them. Section 3 explains the method we propose, as well as the experiment to inspect the effect of the proposed method. Section 4 presents the result from the experiment, which is discussed in Section 5. At last, Section 6 concludes the study and points out the limitation and possible future works.

2. Related Work

We consider our work related to 'conversation' as well as 'engagement in public affair', since we are dealing with conversation between citizens around controversial issues on the society. Currently, Gamification are mostly researched in the field of education [19], and it is also widely applied in fields like workplace or marketing [10][20], while we consider that our work is not categorized into any of these popular research or application field.

Besides the fields mentioned above, despite less cases, there are implementations of game mechanics on public affair recently. Governments practice e-participation, participation of citizens in public affairs through digital devices, with Gamification implemented to increase citizens' engagement [21]; Grace et al. developed and conducted a research on a serious game helping train news audience's ability to distinguish fake news [12], which have become a general and serious problem in current society; Palacin-Silva et al. conducted a research on encouraging people to engage more in environmental issue with the help of Gamification [11]; Mironova et al. proposed a psychological board game to help the adaptation of migrants in new countries [23]. These works express the possibility for Gamification to improve problems in public affair, and we assume that this possibility is also applicable on our work, which is related to public affair as well but from a different aspect.

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Researches about Gamification or game mechanics implemented in conversations have been conducted as well. Oliva et al. presents a serious game for improving communication but in the context of promoting fire safety [9], instead of communication of exchanging opinions that our work deal with; Adachi et al.'s research targets Gamification implementation on improving face-to-face multi-party conversation is conducted [22], while our work focuses on online one-on-one conversation.

Ding et al. propose five design guidelines to motivate users in gamified asynchronous online discussion [28], including setting clear expectations, allowing students to have a certain level of autonomy, promoting students' sense of competence, enriching interactions among students, and creating a safe environment for low-profile students. Their work is conducted in the context of a student learning platform, but the principle may also applicable to our work.

Liu et al.'s study points out that engagement of users using a system is improved with Gamification implemented, while aspects other than engagement still depend more on the main content of the system itself, especially if game elements are merely attached, instead of integrated, to the system [13]. We are aware of this advice and make attempts to integrate game mechanics into our main content instead of a simple attachment.

3. Methodology

3.1 Method

We refer to the Game Element Hierarchy [14] and suggest a method that introducing several game mechanics into conversations.

- Cooperation: induce users to build a smooth conversation together, in which participants are willing to interact positively and remain rational.
- Competition: stimulate users to engage more and behave better in a conversation.
- Feedback and Rewards: reflect how one behaves in a conversation, as well as encourage one to engage more and behave better.

In order to provide a sample to implement our method, we build a web chat app prototype. The mechanics mentioned above is realized by corresponding game components, which is explained along with the later explanation of the prototype. It is worth noting that although game thinking and elements are used in the prototype, the app itself is still a chat app, not a game app. Therefore, our study is still in the range of 'Gamification', not 'Serious game' [8][15].

3.2 Prototype

The web chat app is named "Let's talk G", made with 'ReactJS' [16] and linked with 'Firebase' [17] as its real-time database. The app consists of 3 pages: Chat page, User page, and Ranking page. The following explains the functionality of each page, as well as how the game elements are integrated.

Chat page, the place where users conduct conversations with text messaging in the app, is the core component of our prototype. Here explains the flow of a conversation in the Chat page, as well as the game elements implemented in each situation of a conversation.

- Users share the same 'points' starting from 0, the higher the better; here 'Cooperation' mechanics is realized with the 'Points' interface, encouraging the users to try their best to make the points as high as possible together.
- A user presses a 'Reasonable' or 'Accept' button if he/she thinks what another user says is reasonable and acceptable, and the points they share increase; here 'Feedback' and 'Rewards' mechanics are realized with 'Points' element, showing users that attempt to approve each other is encouraged.
- A user presses the 'Calm down' button if another user is behaving irrationally, so that the points decrease, while that user is disabled to take any action for minutes; here 'Feedback' mechanics is realized with 'Points' and 'Locking/unlocking' interface, offering the user some time to calm down, preventing the user from becoming more irrational.
- At the end of a conversation, users leave comments and give badges to each other; here 'Feedback', 'Rewards', 'Resource acquisition' are realized with comments and 'Badges' interface, giving users motivation to keep on next conversations.
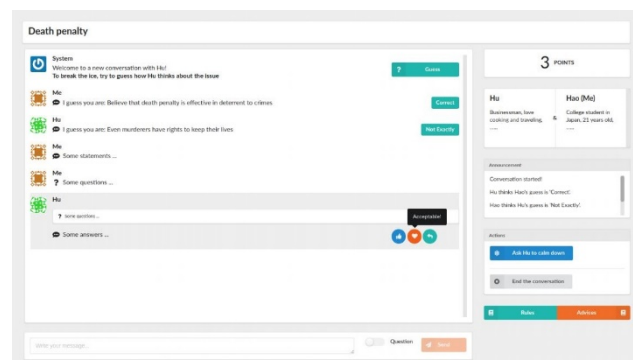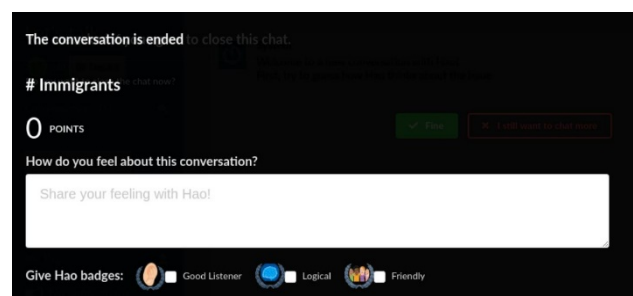

Fig. 1. Chat page

Fig. 2. Chat page - End of a conversation

Ranking page shows the ranking of total points each user obtains in all conversations he/she participated. 'Competition' mechanics is implemented with 'Ranking' interface here.
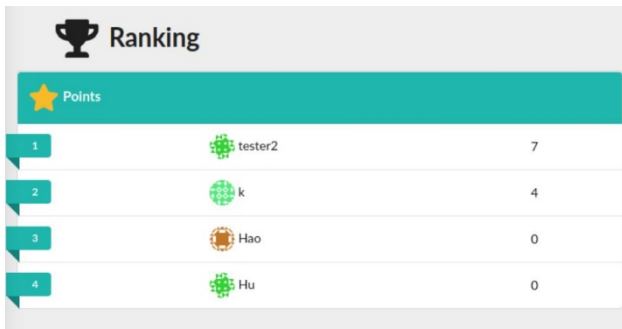
Fig. 3. Ranking page

User page shows a user's profile, total points and total badges the user obtains in all participated conversations. 'Feedback' mechanics works with 'Points' interface, while 'Rewards' mechanics works with 'Badges' interface.

Fig. 4. User page

3.3 Experiment

We first prepare several controversial social issues where people hardly reach a consensus in normal discussions, including death penalty, use of nuclear power, severity of climate change, development of women rights, etc. Then we gather participants, investigate their opinions on each issue with a questionnaire, and match participants with opposite answers to an issue on the questionnaire. We ask the matched participants to discuss about the issue where they disagree with each other. The experiment lasts for 4 days, while Messenger, representing other existing main-stream chat app online, is used for the first 2 days, and our prototype is used for the last 2 days. The matching of participants changes every day, and no participants are aware of the real identity of their conversation opponent.

In this experiment, the independent variable [18] is the platform used to conduct conversations, including 'Messenger' and 'Let's talk G', while the dependent variables [16] are listed below:

- Motivation: Willingness to participate in the conversations, which is collected according to answers to the questionnaire.
- Engagement: Number of messages and total length of messages, which is calculated from data in database after the experiment.
- Effectiveness: Changing in understanding about others' opinions after conversations, as well as changing in one own mind after conversations, which is collected according to answers to the questionnaire.

Data from participants using 'Messenger' is defined as the control group, while data from participants using our prototype is defined as the experiment group. This experiment aims at examining the difference of motivation, engagement, and effectiveness between two groups.

4. Result

The experiment explained in Section 2 was conducted on 8 participants, 4 males and 4 females. During the whole experiment, despite different opinions, all participants conducted conversation without behaving irrationally, in both Messenger and our prototype; the 'calm down' button in our prototype has never been used. 7 participants out of 8 have pressed a 'Reasonable' or 'Accept' button during a conversation in our prototype and all the 8 participants have given feedback and badges to each other after a conversation in our prototype, showing that the game mechanics we prepared are noticed and effectively utilized.

Figure 5 shows the changes in participants' willingness to attend a conversation with our prototype compared with Messenger, which is the indicator of changes in motivation that our method brings. The figure shows that 1 participant perceives much, 5 perceive a little, and 2 perceive none.
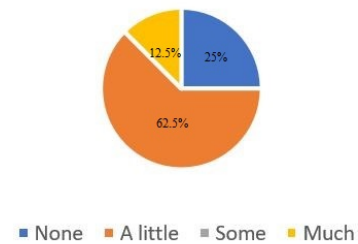

Fig. 5. Changes in participants' motivation to attend a conversation with our method compared with Messenger

Figure 6 shows the changes in participants' own mind about an issue after attending a conversation with our prototype compared with Messenger, which is one of the indicators of changes in effectiveness of the conversations that our method brings. The figure shows that 1 participant perceives much and 7 perceive none.
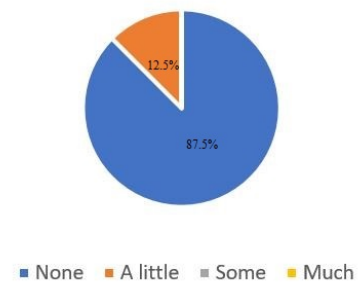

Fig. 6. Changes in participants' mind after having conversation with our method compared with Messenger

Figure 7 shows the changes in participants' understanding about others' thought about an issue after attending a conversation with our prototype compared with Messenger, which is one of the indicators of changes in effectiveness of the conversations that our method brings. The figure shows that 1 participant perceives much, 5 perceive a little, and 2 perceive none.
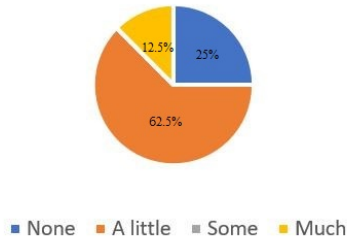

Fig. 7. Changes in participants' understanding about others' thoughts after having conversation with our method compared with Messenger

We also investigate participants preference between our prototype and Messenger, whose result is shown in Figure 8. 4 participants feel no difference, 2 prefer our prototype, and 2 prefer Messenger
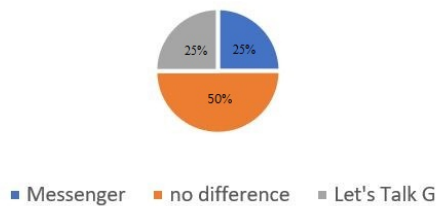

Fig. 8. Participants' preference between our prototype and Messenger

Number and length of messages participants sent in out prototype compared with those in Messenger, which is the indicator of changes in engagement that out method brings, are also examined. The result is shown as follow:

- Average of messages count difference (Case with our prototype – Case with Messenger): -3.250.
- Standard deviation of messages count difference (Case with our prototype – Case with Messenger): 17.678.
- Average of characters count difference (Case with our prototype – Case with Messenger): -163.875.
- Standard deviation of characters count difference (Case with our prototype – Case with Messenger): 238.363.

5. Discussion

In this section, we inspect how much our method improves conversations around controversial issues based on the experiment result showed in Section IV.

5.1 Motivation and effectiveness

We observed only slight improvement in motivation and effectiveness of conversations with our method compared with conversations on Messenger, and we came up with several reasons as follows.

Firstly, it still needs improvement with implementation of Gamification in our method. Gamification can be implemented in various ways, so there is possibility that implementing Gamification in other ways, beside our method, may bring more influence on online conversation around controversial issues. C. de Armas de Armas et al.'s work [25] examines the motivation provided by each game element separately and lists the most effective elements, including some of the elements we integrated in our method like Ranking, Medals, Feedback and Reward; while Blocking activities, which is adopted in our method when a user behaves irrationally, is not considered effective enough to provide motivation; Besides, Ranking element does motivate users at higher places but at the same time demotivate users at lower places [26], which we did not notice and improve in our method.

Furthermore, we did not provide payments or other rewards to the participants in our experiment, so those who were willing to attend the experiment might be holding enough motivation already to conduct conversations with people having different opinions, which results in the limited changes in motivation.

Despite the problems mentioned above, our method still achieves a positive result although with little significance, showing the potential of our method in improving motivation and effectiveness of conversations around controversial issues.

5.2 Engagement

Slightly negative effect happens on engagement of users using our prototype compared with using Messenger. We attribute this negative result to the complexity of our method and users' unfamiliarity with our prototype, discouraging users to engage with our method more. As indicated by Li et al. [24], game designers should reduce game complexity and enhance game familiarity in order to establish better user engagement in a software game. Li et al.'s work focuses on games instead of non-game application with Gamification implemented, while we consider their implication applicable on our case since both works utilize game elements.

The adoption of Messenger in our experiment might have influence as well. We adopted Messenger in order to have our method compared with a rather general and existing case since Messenger is one of a famous social network service and used worldwide, while the comparison with such service might make the unfamiliarity of users with our method more obvious.

In Alessandro and Franca's work [27], although they found a low correlation between usability and engagement in a long-term

game context, they observed a temporal and local decrease in user engagement with a usability problem happened, which might be a reason of the negative result in our experiment since our experiment only lasted for several days. Results might change and the negative effect on engagement of our method might be improved if the experiment period was extended.

5.3 User experience

Although there is no direct relation to our main goals, observation about user preference is also conducted, and we found that our prototype ties with Messenger. We interpret this result as a success of our method being accepted by part of the users as a new form of conversation, despite the unfamiliarity with our prototype compared with current main-stream social media.

6. Conclusion, limitations, and future works

The experiment with our method indicates the potential of Gamification on improving users' motivation and effectiveness of conversations around controversial issues despite little significance. In contrast, our method brings negative effect on engagement, which is considered resulting from the complexity and unfamiliarity users feel toward our method. Meanwhile, user preference between our method and messenger ties, indicating that our method is accepted as an alternative form of conversations.

For future researchers, we suggest at first that the approach should be design simpler in case of disrupting the user experience and causing negative effect on engagement. Loading too many elements to a system is suggested to distract users [25].

Furthermore, the experiment in this paper only lasted for 4 days, with only a short-term effect observed, so the experiment period can be extended if inspecting long-term effect is considered necessary. The decrease on engagement may also get alleviated according to Alessandro and Franca's work [27].

Recruitment of experiment participants is also recommended to be improved. It would be better to recruit more users with lower motivation, perhaps by providing payments or other rewards, so that more significant changes in motivation may be observed. Recruitment of users from more different countries or regions are also recommended since citizens' attitudes and cares toward social issues may alter between different places and cultures.

As mentioned in Section II, Ding et al. propose five design principles for gamified asynchronous online discussion: setting clear expectations, allowing autonomy, competence, relatedness with other users, and free expression for low-profile users [28]. Referring to this proposal, our work is lack of the enrichment among users, so adding this need in future works may also improve the motivation for users to engage in our method.

Last but not least, we suggest the possibility of generalization of our method. In this paper, we examine the implementation of Gamification on conversations around controversial issues, but a method for other kinds of conversation, besides the related works introduced in Section II, or even a method for conversations of any context generally, is also recommended to be designed and examined.

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