Breaking Barriers

Thomas Serban von Davier

05-499: Designing Large-scale Peer Learning Systems
tvondavi@andrew.cmu.edu
December 11, 2016

Abstract:
Current university culture is experiencing a gradual increase in diversity. For many this is an opportunity to express their differences, and celebrate it. However, often times topics of diversity can be difficult for people to share, understand, and even communicate. Nonetheless, attempting to communicate the unique and wonderful things about what makes one diverse is incredibly important in developing an understanding between people. This paper describes a system that is motivated by the question: When people discuss their majors with someone of a different major, do they begin to break down some of the barriers that have formed over time, and do they develop a better understanding of people in the other major? Below I describe the design, prototyping process, and the evaluation of the system in addition to paths of future research. Based on data collected during the prototyping process the system was successful in breaking the barriers placed between people and in developing knowledge about each other. The data also shows that these outcomes are only possible when the system users are distant colleagues or complete strangers. Future research would allow for the implementation of this system through the already existing Talkabout system, and within the context of university orientation programs.

Theories:
This project is inspired by previous research in saving face and Talkabout [1,2]. The prompts target topics that students within the Carnegie Mellon community often try to save face on, such as majors. The system prototype utilizes Google Hangouts, and the goal is to eventually adopt a system like Talkabout that displays the prompts during the video call.

Prototyping Process:
To answer the research question, I decided to implement a parallel prototyping process. There were two versions of the prototype. The first version was an in-person prototype, and the second was an online prototype. Within each version there were multiple prompts written to focus on discussion styles such as: background, perceptions, and knowledge. These prototype prompts are designed to have the participants explore the differences and similarities of their majors, and themselves (refer to Figures 3.1 and 3.2).

After every round of the prototyping process the participants would provide a description of their experience with the system. One of their largest notes was to change the level of personalization of the prompt and the survey questions. Some felt that they were far too personal while others

did not think it was personal enough. This was ultimately controlled for by the number of different prompts provided, each focusing on varying levels of depth and details.

Method:
Data was collected from a total of 20 participants. 8 participants were in the in-person version of the prototype, the other 12 were in the online version. The individuals in the in-person version were randomly given one of 3 different prompts (refer to Figure 3.1). One prompt asked the participants to discuss the choices that led them to select their major, and what they are currently doing for it. The second prompt asks the participants to list everything they know about the other participants major, and then to address these things. The third and final prompt given in the in-person version was a perceptions prompt that had participants address the stereotypes or perceptions they think others have about their major, and to address them.

In the online version only two prompts were used among the 12 participants (refer to Figure 3.2). The new prompt has the participants come list the perceptions they are aware of about the other participant's major. The second prompt is a second attempt at the background prompt aforementioned.

The participants in both conditions were randomly selected, paired up, and then asked to discuss the prompts for approximately 5 minutes. All participants were then given a follow up survey for data collection purposes. The in-person participants were randomly selected from the crowds in Carnegie Mellon University's University Center. The online participants were draw randomly from online groups, and GroupMe's associated with the University. Pairing for the online participants was completely random, but the in-person participants consistently wanted to be paired with their friends rather than a stranger.

Evaluation/Results:
Survey data from the 20 participants indicated that the online version discussions with strangers were effective at providing knowledge about other participants, knowledge about other majors, and changing perceptions of other majors. The data also indicates that the in-person version does not indicate any major change in the aforementioned categories. The data from all of the prompts was aggregated into an in-person data set, and an online data set.

The online data set revealed that 58.3% of participants felt that they learned quite a lot about their discussion partner. Only 16.7% of participants felt that they learned not very much about their partner. In regards to learning about their partner's major, 41.7% of the participants reported that they learned quite a bit about the other person's major. Another 33.3% of participants rated their knowledge gain as somewhat increased. Only 8.3% felt that they learned nothing at all new about their partner's major. Finally, 50% of participants reported that their perceptions of the other major changed quite a bit due to the discussion. Other the other end of the spectrum 33.3% stated that their perceptions did not change at all.

The in-person data set provides a very different image. Only 25% of participants rated that they learned quite a bit about their partner. 50% reported learning somewhat more about their partner, and 25% said they only learned a little bit more. When it came to learning about their partner's major, only 37.5% of the participants learned quite a bit more. However, on the other side 37.5% also reported learning very little to nothing new about their partner's major. When it comes to changing perceptions about other majors 50% of participants in the in-person version reported having no change in perception at all. Only 12.5% reported having their perceptions changed quite a bit.

The final thing both versions responded to was their thoughts about whether or not this type of discussion is important in breaking down barriers. 100% of participants in both majors responded with "Yes" that these types of discussions are the correct way to go.

Although the data above is important for future research and considerations, it is important to address some of the flaws in the data. For example the last data collection question about their thoughts on the potential of the project is very subjective. Additionally, it is very rare that feedback about as system's potentiality does not really mean anything and is simply a courtesy response. Furthermore, almost all of the discussion pairs in the in-person condition were pairs of friends. I believe this led to the lower reports of knowledge gain seen in the data. Naturally, it is also difficult to filter out non-serious responses to the data survey, and this may have impacted the integrity of the data.

Conclusion/Discussion:

My study presented a functional online system that brings strangers together to discuss their majors. The system successfully demonstrated that conversations about topics that people save face over result in better understanding between people, on the condition that the two are strangers. However, many more versions of the online discussion version are required in order to find the most effective way to break barriers. Perhaps changing the amount of time spent discussing the prompt will allow for a greater connection to form between the participants, and as a result lead to better understanding and knowledge.

As this systems comes into more frequent and consistent use, it already possesses a potential market it can enter. The Carnegie Mellon University Orientation Program is an award winning Orientation Program that is constantly looking for ways to improve. One way it has attempted to improve in recent years has been to change its approach to how it handles introductions between new students. The program has noticed that for students who are undecided about their major feel a little uncomfortable mentioning this to students that appear to have everything figured out. This system would be a great way to break down some of these fears about discussing majors. It is also possible to have a moderator, perhaps one of the Orientation Counselors sit in on the video chat to ensure it is well handled. There are a lot of possibilities here, and it does not need to end with this university, breaking barriers is something that happens at every university.

Finally, another future goal for this system will be to be offered through the Talkabout system. All of the online version prototyping was done through Google Hangouts, and the prompt was sent through the chat function. While this is functional it is not ideal, and that is why the Talkabout system would make a better implementation tool for this system.

Reflections:

The largest challenge this system faced was maintaining the integrity and validity of the in-person prototype versions. The people that were randomly selected consistently refused to discuss with anyone that is was a stranger to them resulting in the pairs being friends discussing their majors together. The data was included to show the contrast between pulling strangers into the discussions and pulling friends into the discussion. This difference in outcome is important to note, but so are the reasons for it. Furthermore, there was a concern that by having people hear the stereotypes and perceptions others have of them and their major, there is a chance that there will be very little if any growth or breaking of barriers. I believe this project falls under the same phenomenon seen in the Implicit Attitudes Tests, since both participants are being asked to see the perceptions they hold, and listen to someone of the other group prove those perceptions wrong. I believe the data this project presents supports this pattern of empathetic development and education.

References:

1. Betsy DiSalvo, Mark Guzdial, Amy Bruckman & Tom McKlin (2014) Saving Face While Geeking Out: Video Game Testing as a Justification for Learning Computer Science, Journal of the Learning Sciences, 23:3, 272-315, DOI: 10.1080/10508406.2014.893434
2. Kulkarni, Chinmay, Julia Cambre, Yasmine Kotturi, Michael S. Bernstein, and Scott R. Klemmer. "Talkabout." *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing - CSCW '15* (2015): n. pag. Web.

Appendix:

Figure 1.1 Aggregated data from in-person versions about the knowledge gained about participants.

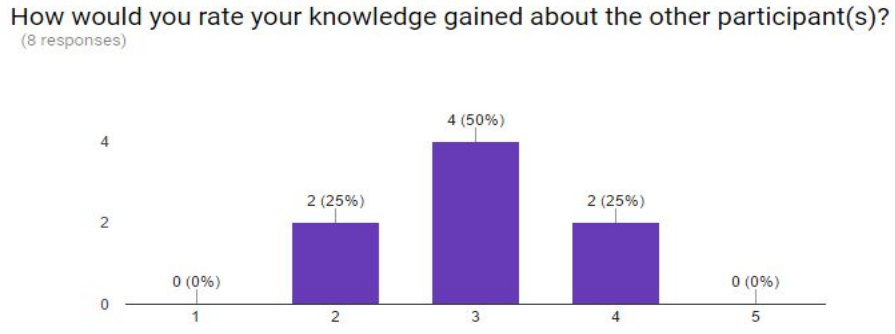

Figure 1.2 Aggregated data from in-person versions about the knowledge gained about majors.

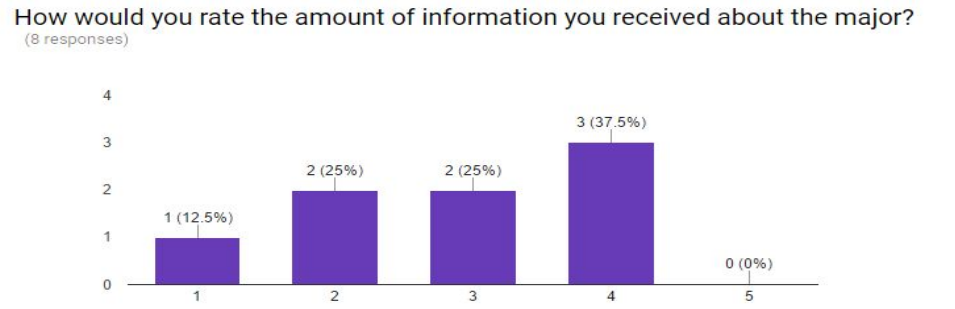

Figure 1.3 Aggregated data from in-person versions about the amount of perception change that occurred.

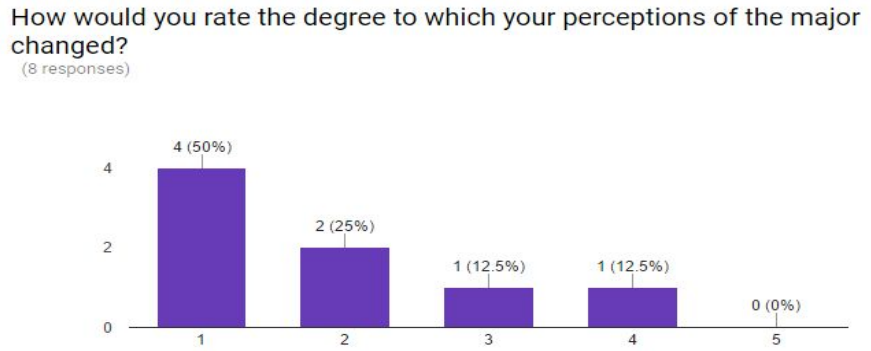

Figure 2.1 Aggregated data from online versions about the knowledge gained about participants.

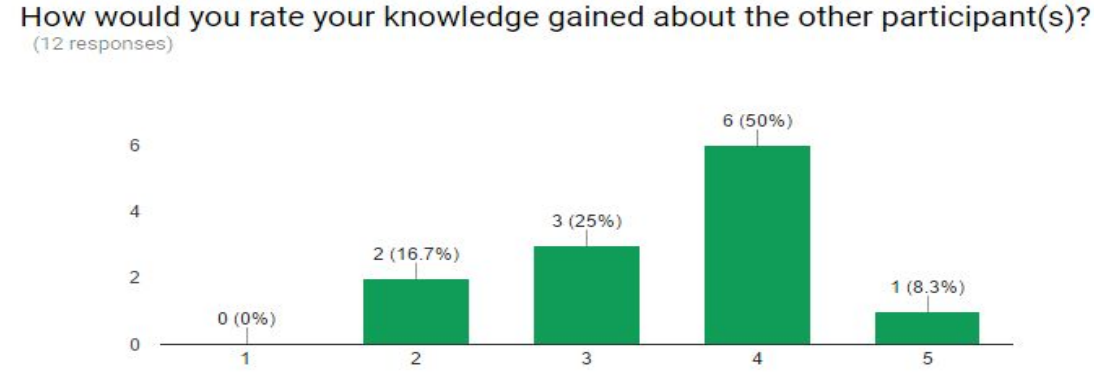

Figure 2.2 Aggregated data from online versions about the knowledge gained about majors.

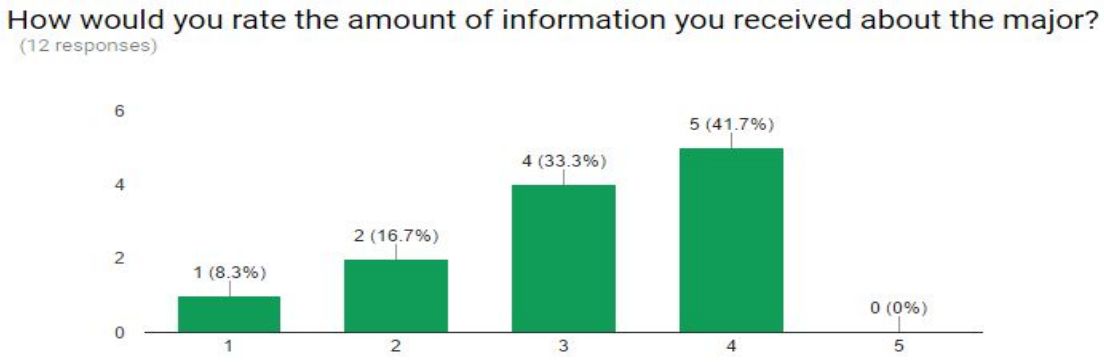

Figure 2.3 Aggregated data from the online version about the amount of perception change that occurred.

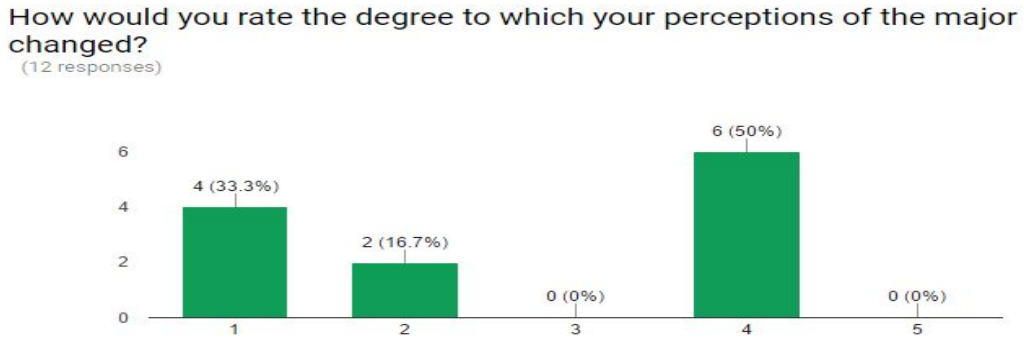

Figure 3.1 In-Person Prompts

General: Discuss your major in general. How did you end up choosing it? What you are currently doing as a student that studies your major? What do you plan to achieve through your major?

List what you know: Discuss your major with your partner. Both of you should try to list things that you believe are associated with or true about the other person's major. Address each other's thoughts and ideas. Are the things your partner brought up true, partly true, or false? Explain.

Stereotypes: Discuss your major with your partner. Both of you should try to think about stereotypes or perceptions people have of your major, and address them.

Figure 3.2 Online Prompts

Reverse Stereotypes: Discuss your major with your partner. Both of you should try to think about stereotypes or perceptions you have of your partner's major. Discuss and address them.

General: Discuss your major in general. How did you end up choosing it? What you are currently doing as a student that studies your major? What do you plan to achieve through your major?