Group Discussion Dynamics in Asynchronous Educational Environments

Overview

In education, it is critical to utilize a wide variety of media and sources to ensure students have ample opportunity to learn. However, in typical education settings, there is typically only one, or very few instructors. This creates a limitation to this source of expertise and experience. While an instructor may have a broad background in a subject, s/he is still a single individual who cannot reasonably be expected to know all aspects and have all experience with a subject.

To overcome this limitation, instructors may be able to use group discussions to allow students to learn from each other's experiences. To ensure that students are exposed to a broad level of experience, students should engage with different individuals throughout the course. In a classroom setting, this is easy to visually monitor and ensure diversity. In remote, asynchronous environments, however, it is not as easy to track and enforce this diversity.

There are two tendencies that may work against diversity in the on-line group discussion. First is the order of prior posts. People who post earlier have a longer period of time for classmates to read and comment on their posts. People who post later have less time for classmates to make comments before the next assignment period. People may also be more likely to read and comment on the posts they see first in the discussion section. This can skew which posts people comment on, and reduce the diversity of the conversation.

The second is the tendency of people in a social setting to interact primarily with others who have a similar background or viewpoint. In this situation, people would more likely comment on posts from people they felt "safe" with (Kadushin). This focus could limit the diversity of the overall group discussions.

Study

To study these dynamics, I mapped the posts, comments, and replies from the DS745 Section 2 discussion group for the first ten discussion topics for the semester. Initial posts were categorized as a "post", while comments on the post were categorized as a "comment". Any response to a commenter was categorized as a "reply". The focus of this study is with initial comments on initial posts. Because of this, only comments counted for this analysis.

Comparing the average post order for each person against the total number of comments received showed that the people who, on average, posted earliest, did received the most comments. This suggests that commenters were influenced by the order of the posts.
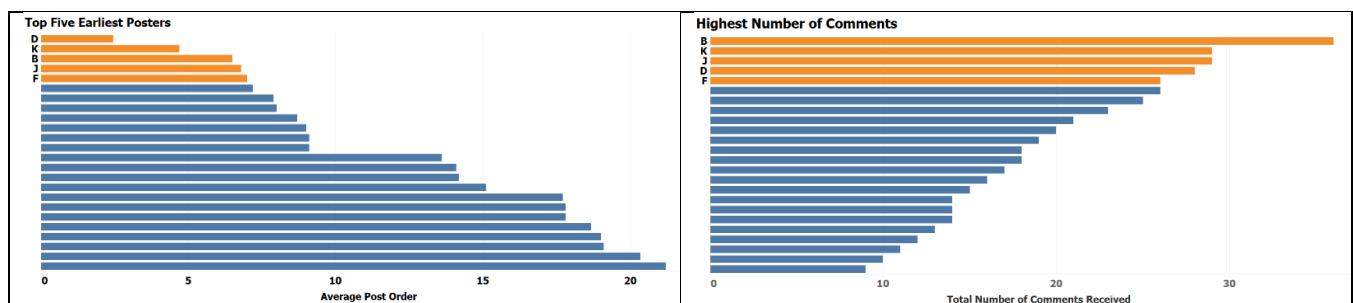
However, this pattern did not hold for all posts. Comparing the number of comments for each post against its order had a weak, negative correlation of -.395.
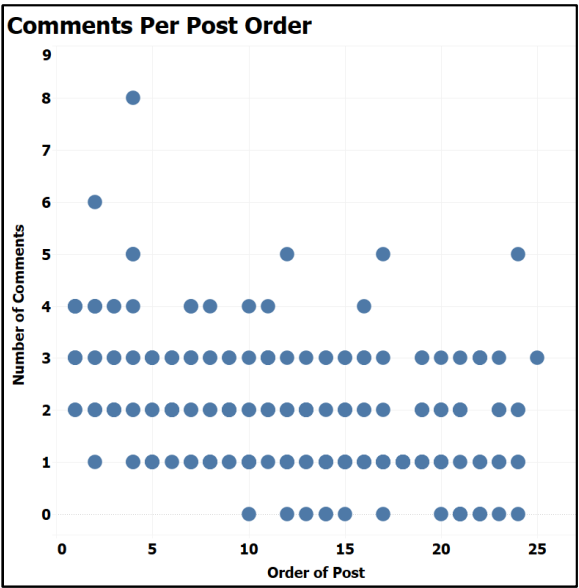
This suggests that people did read later posts and comment on those as well.

To analyze the posts for social grouping, the vertex and edges of the network were analyzed in NodeXL for group clusters. Viewing the results of the 10 weeks of posts illustrated two potential groups. However, the two groups shared a large volume of interaction, and there were not many weak groups to suggest that posts were segmented.
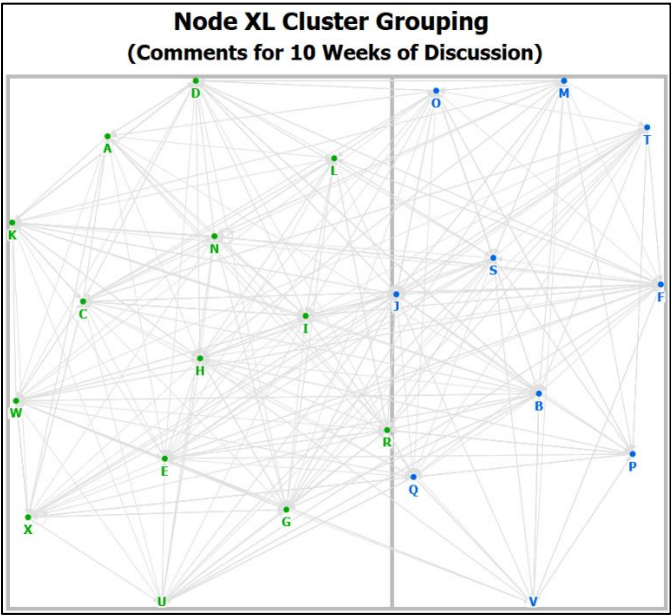
The comments made on posts over the course of 10 weeks of discussion produced a network with a range of vertex clustering coefficients from .489 to .598 with an average clustering coefficient of .534. This clustering coefficient further supports that the comments were not focused on sub groups (Khan).

Conclusion

The DS745 course mandates a specific level of participation with its group discussion to help ensure sufficient interaction. The group size may also be designed with this in mind, but I cannot speak to that directly. Both the general distribution of the number of comments for each post, as well as the lack of strong subgroups inside the primary group, support a conclusion that the diversity of this discussion group's interactions is not significantly reduced by either the order of posting, or the formation of sub groups within the main group.

It may be interesting to see how altering the level of mandatory participation, or the size of the groups would affect the diversity of interaction. I suspect the designers of this program and this course have already experimented with this to reach the current levels.

Report and Data Notes

While this data is fully visible to the instructor and all participants of the class, it has been partially anonymized by removing names, dates, and specific order. However, some of the original data included with this summary report has been retained for the purpose of understanding the data itself. If this were published outside of this environment, I would likely have removed these original references as well and only retained aggregate data for public viewing.

Only the final NodeXL sheet have been included in this report. Other sheets were created to investigate different aspects of the data, but were not used in this report.

The included charts were produced in both Tableau and NodeXL, but were altered in MS paint. This was to add titles or modify labels to help illustrate the discussion points in the report.

References:

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