

Initial Analysis of Prompted Discourse Patterns in an Informal, Online, Global Collaborative Learning Environment

Danielle P. Espino, Pepperdine University, danielle.espino@pepperdine.edu
 Seung B. Lee, Pepperdine University, seung.lee@pepperdine.edu
 Megan Hokama, Pepperdine University, megan.hokama@pepperdine.edu
 Eric R. Hamilton, Pepperdine University, eric.hamilton@pepperdine.edu

Abstract: This analysis examines the discourse patterns of adolescent participants from two countries while engaging in synchronous video conference calls to collaborate on STEM-oriented media projects. Epistemic network analysis (ENA) is used to examine the influence of prompting on student discourse. Results highlight how unscripted prompting helps to generate rich, diverse responses connected to content and curiosity that might not otherwise take place.

Introduction

As learners adjust to a collaborative space dynamic, high levels of discourse engagement and effective instructional methods are vital to creating a sound social space for learning to take place (Kreijns et al., 2013). The role of scaffolded and guided assistance promotes discussion, elaboration, explanation, and reflection in online settings (Morris et al., 2010). Prompts are identified to be composed of hints, guiding questions, and suggestions for improvement (Harney et al., 2015). This project involves adolescent learners who participate in afterschool clubs to collaborate online with learners in other countries on developing digital media projects with STEM (science, technology, engineering, math) focused content to enhance their understanding of those subjects. Participants interact synchronously through video conference calls known as online global meet-ups, where participants from at least two clubs join and a facilitator helps support the conversation. In an effort to foster engagement, the facilitator informally calls on participants with unscripted prompts related to the topic being discussed. Peers also contribute to prompting one another during the meet-ups. The exchange of information and feedback among students can lead to enhanced cognitive engagement, especially as they provide and receive explanations from their peers (Ge & Land, 2004). This study looks at the influence of prompting in promoting student engagement in an informal, online collaborative environment.

Methods

This analysis examines discourse data from two online meet-ups held in 2018 and 2019 involving students in Kenya and the United States. In the analysis, each turn of talk, or utterance, represented one line of data. Two raters separately coded all lines for eight constructs, identified as the most relevant from a grounded analysis of the data: Collaborative Disposition, Content Focus, Curiosity, Feedback, Information Sharing, Media Production, Participatory Teaching and Social Disposition (see Table 1). Each utterance was analyzed for whether it was prompted by another line (i.e., the response given by a participant to a specific, directed request for their input was classified as a prompted utterance). All other lines, including self-initiated elaborations, were categorized as unprompted utterances. The final coding was determined through a process of social moderation.

Table 1: Codebook of constructs included in the analysis

Code	Description
Collaborative Disposition	Promoting cooperation between two or more individuals to accomplish a project task
Content Focus	Dialogue focused on the meet-up's STEM-related educational content
Curiosity	Seeking clarification for better understanding of STEM-related content or project
Feedback	Communicating one's opinions/ideas or sharing suggestions on projects
Information Sharing	Sharing of personal experiences or contextual information relevant to the discussion
Media Production	Dialogue related to the production of media artifacts
Participatory Teaching	Helping others to learn STEM subject matter by providing fact information in explanation
Social Disposition	Demonstrating pro-social tendencies (e.g., appreciation, acknowledgement or validation)

The coded data was analyzed using epistemic network analysis (ENA), a technique in quantitative ethnography utilizing visualization and statistical methods to identify meaningful patterns in discourse. ENA models the connections among salient constructs in the data by quantifying the frequency of their co-occurrences

within conversations (Shaffer, 2017). In this study, an individual participant was defined as the unit of analysis, and each meet-up constituted a conversation to which the connections were limited.

Results

This study analyzed a total of 699 utterances from meet-ups in November 2018 and May 2019. A total of 15 unique students from Kenya and the U.S. participated in the meet-ups. Of the 425 lines spoken by students, prompted utterances accounted for about 34% while unprompted utterances made up around 66%. Figure 1 displays the ENA network for the prompted and unprompted utterances spoken by student participants during the two meet-ups. The individual networks exhibit similarities in their prominent connections between several codes. In particular, it can be seen that Content Focus plays a central role in both networks, with strong associations to Information Sharing, Social Disposition, and Media Production, among others. As shown in the subtracted network model (c), the main difference between the two networks is the connection between Media Production and Collaborative Disposition, stronger in the unprompted utterances. On the other hand, the linkage between Content Focus and Curiosity was much more prominent in the prompted utterances, along with relatively thicker connections between Content Focus, Collaborative Disposition and Information Sharing.

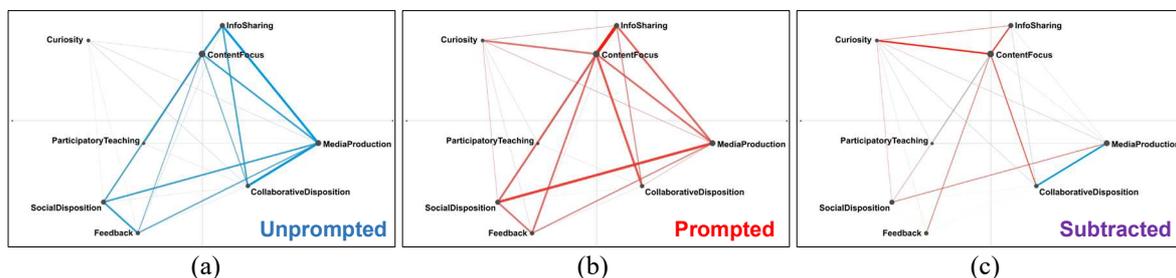


Figure 1. ENA networks for (a) unprompted (b) prompted utterances, and the (c) subtracted network

Discussion

The results above show the impact of prompting on the discourse patterns exhibited by participants in a global, virtual collaborative learning environment. In comparing prompted and unprompted utterances from students, prompted responses have stronger connections to content and other constructs, notably with Curiosity, Information Sharing, Collaborative Disposition and Feedback. This reflects how much unscripted prompting promotes discourse related to content. Unprompted utterances uniquely drew a strong connection independent of content, between Collaborative Disposition and Media Production, speaking to the natural desire for students to discuss making media artifacts together in the project environment. These findings highlight how unscripted prompting helps to generate rich, diverse responses connected to content and curiosity that might not otherwise take place. At the same time, unprompted student utterances compliment strong content connections from prompts by focusing on collaborative and media aspects, such as expressing the desire to work together on media projects. While these initial results focused on prompted versus unprompted discourse, the use of ENA provides additional possibilities for analysis such as peer versus facilitator, type of prompt, and along other metadata (e.g., gender).

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