Supporting Social Deliberative Skills in Online Classroom Dialogues: Preliminary Results Using Automated Text Analysis*

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Abstract. We describe a study in which we tested features of online dialogue software meant to scaffold "social deliberative skills." In addition to hand coding of the dialogue text we are exploring the use of automated text analysis tools (LIWC and Coh-Metrix) to identify relevant features, and to be used in a Facilitator Dashboard tool in development.

Keywords: online deliberation, social deliberative skills, text analysis.

Social Deliberative Skills. The capacity to deliberate with others about complex issues where interlocutors have differing viewpoints is paramount for so many life contexts, including citizen engagement, collaborative problem solving, knowledge building, and negotiating needs in personal relationships. We use the term "social deliberative skills" to point to a set of skills that are important to success in such deliberative contexts. Social deliberative skills include the skills of perspective-taking, social inquiry (perspective-seeking), meta-dialog, and reflecting on how one's biases and emotions are impacting a deliberative process. Our research is looking into how to support higher quality deliberations in online contexts by supporting such skills. We are investigating a number of deliberative contexts, including online dispute resolution (for e-commerce, divorce settlements, and workplace disputes), online civic engagement, and online discussion forums on topics of importance to participants (including college students).

We are interested in supporting higher quality deliberations in both facilitated (with mediators, arbitrators, moderators, etc.) and non-facilitated dialogues. For facilitated dialogues we are designing a Facilitator's Dashboard that will allow a facilitator to get a birds-eye-view of one or more dialogues, and monitor key indicators to help decide when and where to make useful interventions.

A key technology in our research is automated text analysis to characterize participant posts along a number of relevant dimensions, such as emotional tone, self-reflection, topic abstraction, etc. We are investigating whether text analysis methods developed by Pennabaker et al. (2007) and Graesser et al. (2011) can measure

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characteristics relevant to supporting quality deliberation, so that this automated analysis can be used to provide real-time assessment of online dialogue.

Method. Forty college students in students in an Alternative Dispute Mediation courses were assigned a series of discussions to be had online. Students engaged in a sequence of three online dialogues, one per week, over three weeks on topics that they proposed as being controversial and interesting: marijuana legalization, sexual choices, and capital punishment. For the online discussions we used the Mediem software created by Idealogue Inc., which has a discussion forum format with a number of features to support deeper engagement and reflective dialogue.

Fig. 1. A, B: Mediem Sliders and Reflective Tools

Figure 1a shows the detailed view of the Opinion Slider feature, which gives a summary view of where participants stand on an issue. Figure 2b illustrates the Story feature, which gives participants a special place to say how the issue at hand relates to them personally; the Conversation Thermometer, a meta-dialogue tool that allows participants to rate (vote on) the quality of the conversation at any time, and the Contribution Tag feature, which allows participants to give brief comments on other's contributions. There were 3 experimental conditions: Condition V used the "vanilla" version of the software with no reflective features; condition S used the Slider feature, and condition R used the other three Reflective features (but not the sliders). Data sources included a post-survey and records of text and tool use from the software.

Results. Data is still being processes and will be reported at the conference. We are analyzing social network connectivity, post-survey data, human coding of the dialogue text, and automatic coding of the dialogue text. Initial analysis using ANOVA to measure differences between the control and experimental groups looked promising but re-analysis using mixed effects methods (including hierarchical linear modeling) negated some of the significance findings. Further inspection of the data showed that students did not use the special features of the software as much as was hoped, and we are planning an additional study this spring to remedy that. Automoatic text analysis, especially that produced by the LIWC system, showed promise for computational identification of features of the dialogue that would be of interest to facilitators in the Facilitator Dashboard.

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