

Does Labeling Posts with Descriptive Subject Headings Enhance Critical Thinking in Online Discussions?

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Introduction

This study examined the possible effects of requiring students to insert into message subject headings of individual discussion board posts with meaningful and descriptive titles. It was hypothesized that descriptive headings would reduce extraneous cognitive load by orienting learners to the context of each message to prior messages before posting responses to a message. When students return to the discussion forum throughout the week to build on the discussion, it is hypothesized that students will be able to reorient themselves in the discussion and recall the content of various posts by simply viewing the index of descriptive subject headings. This in turn would enable students to post responses that are appropriate and in context to ideas presented earlier in the threads without having to re-open and re-read all prior postings. It was further hypothesized that this reduction in extraneous cognitive load would free up mental resources, resulting in a substantive increase in the level of the responses to postings and increase the level of critical thinking and/or depth of discussion.

Research Questions

To determine if descriptive subject headings contribute to an increase in critical thinking, three research questions were examined:

- 1) Do descriptive message headings affect the distribution rates and patterns of responses to arguments, challenges, evidence, and explanation posts?
- 2) Do descriptive message headings affect the mean number of responses to arguments, challenges, evidence, and explanation posts?
- 3) Do descriptive message headings affect the maximum thread depth of a discussion thread?

Method

The participants in this study were graduate students enrolled in online courses at a large university in the southeast region of the U.S. between 2004 and 2011. Seven classes were chosen for this study. Each class had an average of 16 students enrolled and required four online debates on the discussion board. A total of 852 posts were examined across all four online debates from each of the seven classes included in the study.

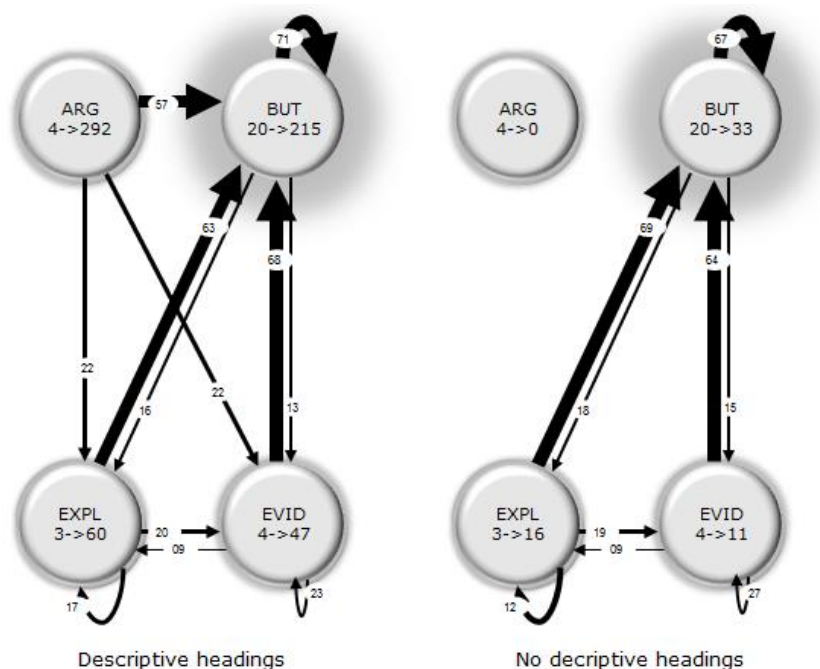
Students were required to classify and label each of their posts as an argument (ARG), challenge (BUT), evidence (EVID), or explanation (EXPL) along, *and* were instructed to include a descriptive heading that concisely summarized the content of the post. After the discussion, the researcher further classified each post as either containing or not containing a descriptive subject heading.

<input type="checkbox"/>	<input type="checkbox"/> SUPPORT statement because...	Student names	Sat Oct 2, 2004 11:18 am
<input type="checkbox"/>	<input type="checkbox"/> +ARG#1 MedialsButAMereVehicle	Student names	Mon Oct 4, 2004 8:47 pm
<input type="checkbox"/>	<input type="checkbox"/> -EVID MedialsButAMereVeh...	Student names	Tue Oct 5, 2004 7:09 pm
<input type="checkbox"/>	<input type="checkbox"/> +But RelativityTheory...	Student names	Tue Oct 5, 2004 9:43 pm
<input type="checkbox"/>	<input type="checkbox"/> -But RelativityThe...	Student names	Sat Oct 9, 2004 10:12 am
<input type="checkbox"/>	<input type="checkbox"/> -BUT Whataboutemotions?	Student names	Tue Oct 5, 2004 9:53 pm
<input type="checkbox"/>	<input type="checkbox"/> +EVID DistEdEffectiveAsF2F	Student names	Tue Oct 5, 2004 10:40 pm
<input type="checkbox"/>	<input type="checkbox"/> -BUTMediaamerevehicle	Student names	Wed Oct 6, 2004 8:19 pm
<input type="checkbox"/>	<input type="checkbox"/> +EVID MooreConcurs	Student names	Wed Oct 6, 2004 10:07 pm
<input type="checkbox"/>	<input type="checkbox"/> +EXPLMediaSelectionCo...	Student names	Sun Oct 10, 2004 12:35 am
<input type="checkbox"/>	<input type="checkbox"/> -BUT WellChosenEffect...	Student names	Sun Oct 10, 2004 4:31 pm
<input type="checkbox"/>	<input type="checkbox"/> +But SupportingRes...	Student names	Sun Oct 10, 2004 5:37 pm
<input type="checkbox"/>	<input type="checkbox"/> -BUTMediaismorethanamere...	Student names	Fri Oct 8, 2004 5:30 pm
<input type="checkbox"/>	<input type="checkbox"/> +BUT SupportingEviden...	Student names	Sat Oct 9, 2004 8:51 am
<input type="checkbox"/>	<input type="checkbox"/> -BUT LearningNotSimplyAP...	Student names	Mon Oct 11, 2004 9:54 am
<input type="checkbox"/>	<input type="checkbox"/> +ARG2 Standards for teaching	Student names	Wed Oct 6, 2004 1:48 pm
<input type="checkbox"/>	<input type="checkbox"/> +But Clarification?	Student names	Sun Oct 10, 2004 5:39 pm
<input type="checkbox"/>	<input type="checkbox"/> +ARG3 MediaUnrelatedtoLearn...	Student names	Wed Oct 6, 2004 3:12 pm
<input type="checkbox"/>	<input type="checkbox"/> -BUTMediaUnrelatedtoLear...	Student names	Wed Oct 6, 2004 8:26 pm
<input type="checkbox"/>	<input type="checkbox"/> +BUT MediaSelection	Student names	Thu Oct 7, 2004 9:20 am
<input type="checkbox"/>	<input type="checkbox"/> -BUT MediaSelection	Student names	Sun Oct 10, 2004 11:21 am
<input type="checkbox"/>	<input type="checkbox"/> +EVID MethodNotMedia	Student names	Wed Oct 6, 2004 11:04 pm
<input type="checkbox"/>	<input type="checkbox"/> -BUT MediaUnrelatedtoLea...	Student names	Sat Oct 9, 2004 10:59 am

Using the Discussion Analysis Tool, sequential analysis was conducted to identify prevalent patterns in message–response exchanges by first determining the probability in which a given message was able to elicit a specific type of response, and then testing to see if the distribution of response probabilities for each message type was significantly different between messages with versus without descriptive headings. Using event sequence analysis, this study looked to identify prevalent patterns in message–response sequences by: (1) counting the frequency of specific responses to each type of message; (2) converting the response frequencies to transitional probabilities for each observed message–response interaction; and (3) converting the transitional probabilities into transitional state diagrams to provide a visual birds-eye view of interaction patterns.

Results

Differences in response distributions. The transitional state diagrams presented below shows that overall the response patterns between messages with vs. without descriptive headings are very similar. Nevertheless, a significant difference was found in the response distributions to challenges with vs. without descriptive headings, $\chi^2(2, N = 248) = 88.3, p = .00$. No significant differences were found in the response distributions to explanations, $\chi^2(2, N = 58) = 2.04, p = .361$, and evidence, $\chi^2(2, N = 76) = .715, p = .699$. Chi-Square test was not conducted on responses to arguments with vs. without descriptive headings because all but four arguments included a descriptive heading and message label.



Differences in mean number of responses. Given that a significant difference was found in the response distributions to challenges posted with vs. without descriptive headings, an independent sample t-test was conducted to determine if this differences in response pattern results in a significant difference in the mean number of responses posted in reply to challenges with vs. without descriptive headings. The results showed that challenges with descriptive message headings elicited more responses ($M = .104$, $SD = .360$) than challenges without descriptive headings ($M = .065$, $SD = .263$) by 37.5%, $t(2572) = 2.26$, $p = 0.012$. In addition, no differences were found in the mean number of responses posted in reply to evidence posts, $t(742) = .78$, $p = .22$, and explanations, $t(742) = .36$, $p = .36$.

Effects of depth of discussions. The correlation between the percentage of responses with descriptive headings posted within each argument's discussion thread and the maximum thread depth of any response within the argument thread was statistically significant, $r(139) = .14$, $p < .05$.

Discussion

These findings suggest that requiring students to customize the subject headings of postings in threaded discussions with meaningful and descriptive short titles can: a) increase the number of times students post responses/rebuttals to challenges by as much as 37.5% to promote higher levels of critical thinking in the discussion; and b) increase to a small extent the depth of a discussion thread. These findings suggest that Learning Management Systems (LMS) like Blackboard should not by default copy and insert the subject heading of the parent post into the subject heading of the response to the parent post. Instead, Blackboard should leave the subject heading blank and require students to enter a descriptive message heading before the posting can be submitted to the forum.

Future study is necessary to: a) determine the *separate* and relative impact of using descriptive message titles versus using message labels to see if larger correlations and effects can be found between the use of descriptive headings and depth of discussion threads; and b) identify the types of characteristics of subject heading's that particularly promote specific types of exchanges (e.g., ARG->BUT, BUT->EXPL) that have been show in prior research to produce more critical discourse and deeper learning.