

# Argument elaboration during structured and unstructured dyadic chat discussion in secondary school

Timo Salminen, Miika Marttunen & Leena Laurinen

University of Jyväskylä, Department of Educational Sciences, Jyväskylä, Finland

## Abstract

This study aims to investigate whether structuring an interaction supports students' elaborative argumentation. The study compares the quality of secondary school students' ( $N = 16$ ) argumentation during dyadic structured and unstructured computer-based chat interaction. The results suggest that structuring an interaction increases the proportion of argumentative discussion, whereas unstructured discussion seems to produce more elaborated argumentation. However, the results indicate that the discussion topic must be debatable in order to achieve critical and elaborative dialogue. Structuring an interaction can be used to foster counterargumentation on the topics that do not spontaneously provoke different viewpoints.

**Keywords:** argumentation, argument elaboration, structured chat, unstructured chat, secondary school

## 1. Introduction

Participating in general debates on many societal questions requires that we can express our thoughts and statements in a clear and convincing way, as well as consider and judge others' views and arguments constructively. This, in turn, depends on the quality of persons' argumentation skills. However, several studies have shown that adolescents have difficulties with these skills (e.g. Felton & Kuhn, 2001; Marttunen et al., 2005).

In addition to the need to learn to argue, argumentation can be seen as a means to learn. Argumentation is a dialogical and dialectical phenomenon which can be integrated with a transformative view of knowledge. An argumentative dialogue helps students to elaborate their viewpoints by broadening and deepening them. However, engaging constructively in an argumentative interaction is a demanding task. This study focuses on whether structuring a synchronous chat interaction promotes students' elaborative argumentation.

In synchronous chat discussion a number of issues can be considered concurrently. Having to articulate opinions and arguments more precisely clarifies participants' own thought-processes (Burnett, 2003). Synchronous chat interaction has also been found to help students to express more substantial, sound, and logical arguments, and to offer examples and justifications more sharply to the point (Morgan & Beaumont, 2003). However, the pressure to contribute quickly can cause discussions to diverge rapidly, making it difficult to explore ideas in any depth or to explain argumentative relations between claims, reasons and justifications (Burnett, 2003).

Structuring a discussion by using prompts such as questions can help to maintain focus on the subject matter, decrease off-task talk, and lead to a more coherent discussion on the topic (Hron et al., 2000). In particular, structuring an interaction in order to facilitate counterargumentation is a good way to enhance the quality of discussion. According to McAlister et al. (2004), the argumentation process was more coherent, varied, and deeper when structured chat with sentence openers (such as "I disagree because...") was used compared to unstructured chat.

The research questions of this study are the following: 1) How argumentative are students' dyadic chat discussions?, 2) Does the mode of chat (structured vs. unstructured) or the

discussion topic (Vivisection vs. Gender equality) have an effect on the argumentativeness of the discussions?

## 2. Method

### 2.1. Teaching experiment

16 students participated in a teaching experiment carried out in a Finnish secondary school as a part of a course in Mother Tongue. The experiment during two 90-minute sessions on different days consisted of four phases: 1) Introduction and motivation, 2) Preparation, 3) Discussion, and 4) Diagram construction. However, this study focuses only on the discussion phase of the experiment.

The discussion topic for the first session was Vivisection and Gender equality for the second session. The students were divided into two groups according to their schedule during the week the experiment was carried out. During the first session group 1 discussed the topic in pairs using the unstructured chat, and group 2 using the structured chat. During the second session the order was reversed.

During the introduction and motivation phase (25 minutes) the researcher taught the students the template categories of the structured chat and how they can be used during a discussion. To motivate the students to the discussion the students were asked to fill in a short cloze test on Vivisection, and in the second session they discussed the role of gender in working life and student counselling. Next the students prepared themselves for the chat discussion by reading (20 minutes) three articles consisting arguments both for and against the topic.

During the discussion phase the students engaged in chat in pairs for 15 minutes. The teacher formed the student pairs as to maximise the number of mixed gender pairs. The task was as follows: *Engage in a chat discussion with your partner on the following claim: Vivisection should be allowed (or: There is Gender Equality in Finland).* After the discussions the student pairs constructed an argument diagram (20 minutes) on the basis of the discussion they had just finished.

Chat discussions were carried out using either an unstructured or a structured chat tool. The unstructured chat tool was an ordinary synchronous textual chat tool. The structured synchronous chat tool consisted of a set of templates (Hirsch et al., 2004). These templates (Table 1) contain four categorised sets of full sentences or partial sentences: 1) Argument, 2) Explore, 3) Opinion, and 4) Comment.

### 2.2. Data and analyses

The data consist of 16 dyadic chat discussions (speech turns,  $N = 609$ ). Eight chat discussions concern Vivisection, and eight Gender equality. Eight discussions were carried out by using unstructured chat (420 speech turns), and eight by using structured chat (189 speech turns).

The data analyses focused on the *argumentative quality* of the chat discussions. First, all the speech turns were defined as either argumentative or non-argumentative. Second, the argumentative structure of the discussions was analysed by differentiating the claims, arguments, counterarguments, and rebuttals (Björk & Räisänen, 1996). Third, the following variables were formed: *Argumentativeness* of the chat discussions was indicated by counting the proportion of argumentative speech turns in the discussions. *Breadth of argumentation* was defined by counting the number of arguments and counterarguments directly linked to the main thesis. *Number of arguments for, and against* the main thesis were counted to assess how balanced the argumentation was. *Depth of argumentation* was defined by counting the mean length of all the argument chains (the number of arguments and counterarguments

successively linked to each other) included in the discussion. *Counterargumentativeness* of the chat discussions was indicated by calculating an index which depicts the critical quality of the argumentation in the discussions. The index indicated the proportion of counterarguments and rebuttals in relation to claims and arguments (if the students had reacted to every claims and arguments presented by expressing a counterargument or a rebuttal, they would have scored the value 1.0).

Table 1. The templates of structured chat including the examples of the data

Categories		Templates
Argumentative categories	Argument	1) Could you give an argument for statement X? 2) I support statement X because <i>several Finnish women have gone far in our country.</i> 3) Could you give an argument against statement X? 4) I attack statement X because <i>men don't yet seek their way equally also to "female fields"</i> .
	Explore	5) Could you clarify statement X? 6) I would like to clarify statement X by saying <i>that in general gender equality comes true.</i> 7) There is a problem between statement X and statement Y because <i>men have, however, a full freedom to seek their way to "female fields"</i> . 8) I retract statement X because <i>attitudes of society and circle of acquaintances affect greatly in the situation.</i> 9) Could you give an example to justify statement X? 10) I would like to justify statement X by saying <i>that in our school there is one nameless male teacher of maths who cannot understand that also girls can be good in maths.</i>
Non-argumentative categories	Opinion	11) I don't agree with statement X. 12) I agree with statement X. 13) I changed my opinion about statement X. 14) What is your opinion about statement X?
	Comment	15) Hello!                      19) Hurry up! 16) Bye!                        20) Slow down! 17) My turn.                 21) I would like to talk about statement X. 18) Your turn.               22) I see what you mean.

### 3. Results

The results (Table 2) show that on average in the chat discussions half (49 %) of the speech turns was argumentative. The students expressed on average somewhat more argumentative speech turns in the structured chat discussions than in the unstructured chat discussions (54% vs. 45%), in particular when the topic was Gender equality (51% vs. 36%).

The mean breadth of the chat discussions was 3.0. The unstructured discussions contained on average more arguments and counterarguments than the structured discussions (3.5 vs. 2.5), but only in the discussions on Vivisection (3.8 vs. 1.8). In addition, in the unstructured discussions the argument chains were on average longer (depth of argumentation) than in the structured discussions (5.3 vs. 3.9).

During the unstructured discussions the students produced on average more arguments for the main thesis than against it (2.6 vs. 0.9). However, the result was reversed in the structured discussions (1.1 vs. 1.4). In addition, the structured discussions contained on average more arguments against the main thesis than the unstructured discussions (1.4 vs. 0.9), in particular when the topic was Gender equality (1.5 vs. 0.5).

The discussions on Vivisection were more counterargumentative than the discussions on Gender equality (3.1 vs. 1.2). However, the structured discussions on Gender equality were twice as counterargumentative as the structured discussions on Vivisection (1.6 vs. 0.8).

Table 2. Argumentative quality of the chat discussions by topics and modes of chat

Variable	Mode of chat	Topic		
		Vivisection (M)	Gender equality (M)	Total (M)
Argumentativeness: Proportion of argumentative speech turns (%)	Unstructured	53.8	36.0	44.9
	Structured	56.1	50.9	53.5
	Total	55.0	43.4	49.2
Breadth of argumentation	Unstructured	3.8	3.3	3.5
	Structured	1.8	3.3	2.5
	Total	2.8	3.3	3.0
Number of arguments FOR the main thesis	Unstructured	2.5	2.8	2.6
	Structured	0.5	1.8	1.1
	Total	1.5	2.3	1.9
Number of arguments AGAINST the main thesis	Unstructured	1.3	0.5	0.9
	Structured	1.3	1.5	1.4
	Total	1.3	1.0	1.1
Depth of argumentation	Unstructured	6.3	4.3	5.3
	Structured	4.3	3.6	3.9
	Total	5.3	4.0	4.6
Counter-argumentativeness	Unstructured	3.5	0.8	2.1
	Structured	2.8	1.6	2.2
	Total	3.1	1.2	2.1

## 4. Conclusion

The results suggest, first, that the argumentative quality of the chat discussions seems to be related to the mode of chat. Structuring a synchronous discussion seems to promote argumentative interaction between students. Second, structuring maintains the students' focus on a few arguments, and directs them to elaborate their arguments in particular through counterargumentation.

Third, the results showed that Vivisection as an ethical issue raised elaborative argumentation. But, the other topic, Gender equality, was not as a disputable topic as Vivisection. However, it seems that structuring an interaction can be used to foster critical discussion on this kind of topics that do not spontaneously provoke different viewpoints.

## References

- Björk, L. and Räisänen, C. (1996). *Academic writing. A university writing course*. Lund: Studentlitteratur.
- Burnett, C. (2003). Learning to chat: tutor participation in synchronous online chat. *Teaching in Higher Education*, 8 (2), 247–261.
- Felton, M. and Kuhn, D. (2001). The development argumentative discourse skill. *Discourse Processes*, 18, 135–153.
- Hirsch, L., Saeedi, M., Cornillon, J. and Litosseliti, L. (2004). A structured dialogue tool for argumentative learning. *Journal of Computer Assisted Learning*, 20 (1), 72–80.
- Hron, A., Hesse, F. W., Cress, U. and Giovis, C. (2000). Implicit and explicit dialogue structuring in virtual learning groups. *British Journal of Educational Psychology*, 70, 53–64.
- Marttunen, M., Laurinen, L., Litosseliti, L. and Lund, K. (2005). Argumentation skills as prerequisites for collaborative learning among Finnish, French, and English secondary school students. *Educational Research and Evaluation*, 11 (4), 365–384.

McAlister, S., Ravenscroft, A. and Scanlon, E. (2004). Combining interaction and context design to support collaborative argumentation using a tool for synchronous CMC. *Journal of Computer Assisted Learning*, 20 (3), 194–204.

Morgan, W. and Beaumont, G. (2003). A dialogic approach to argumentation: Using a chat room to develop early adolescent students' argumentative writing. *Journal of Adolescent & Adult Literacy*, 47 (2), 146–157.