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AUTHOR Marttunen, Miika; Laurinen, Leena
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ABSTRACT

This study involved a teaching experiment in which academic argumentation was practiced during a ten-week email course in a Finnish university. During the course, two working methods were used: free debate and role play. The aim of the study was to clarify how these two working methods activated students in mutual argumentative dialogue and affected its quality. The research questions were: (1) "How interactive were the students' messages?"; (2) "How argumentative was the interaction?"; (3) "What roles did the students assume during the interaction?"; and (4) "Was the quantity and quality of interaction affected by working method and gender?" An analysis of students' messages indicated that most (78 percent) were interactive, but most of those only involved two students. Most messages took a neutral position. Thus, findings suggested that one of the tasks of the course, to encourage students to engage in active argumentative discussion with contributions by many students, was not satisfactorily achieved. Role playing increased argumentation, and gender differences were noted. (Contains 17 references.) (EV)

QUALITY OF E-MAIL ARGUMENTATION IN HIGHER EDUCATION

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Miika Marttunen and Leena Laurinen
University of Jyväskylä
Department of Education
P.O.Box 35, FIN-40351
Jyväskylä, Finland
Phone: + 358 14 260 1842
Telefax: + 358 14 260 1661
E-mail: mmarttun@edu.jyu.fi

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Introduction

The rapid development of information and communications technologies has brought with it new challenges for the education of people in the new network society. Koski (1999) finds information overload, or "infoglut" as he terms it, to be one of the most serious problems of the network society. The core of this problem is that various kinds of new media, information networks in particular, provide people with such large amounts of information that they are gradually becoming unable to cope with it. Kerr (1996) emphasizes that in order to overcome the problem of infoglut education should focus more on teaching information-handling skills. Such skills include the ability to find information relevant to one's own needs, to screen and cull this information what is essential and to conduct analyses and produce syntheses based on it. These abilities are inevitable components of argumentation and critical thinking skills. People skilled in argumentation and critical thinking are able to put forward relevant and sufficient reasons for their claims, to assess the strengths and weaknesses of other peoples' arguments (Voss & Means, 1991), and to analyse and organise information (Adams & Hamm, 1990). For this reason, it is worth providing members of the network society with the systematic practice of argumentation and critical thinking skills.

Electronic mail can be regarded as an appropriate medium for developing argumentation skills at the university level since electronic communication media have been found to facilitate person-to-person communication (e.g. Chiew & Tobin, 1999; Kearsley et al., 1995). Recent studies (Alavi, 1994; Hacker & Sova, 1998) have also indicated that students' learning results in terms of subject content improved when studies were based on the use of e-mail. It has also been shown that argumentation in students' e-mail messages improved as discussion conducted by e-mail proceeded during a six-week course on argumentation (Marttunen, 1997). Studies in which the content of e-mail and face-to-face discussions has been compared (Marttunen & Laurinen, 1999; Newman et al., 1996) suggest that students' argumentation is more developed and more carefully structured when e-mail is used. Furthermore, recent results on experimental pretest-posttest designs have indicated that students' argumentation skills have improved during academic e-mail courses (Marttunen & Laurinen, in press).

Although e-mail has demonstrated its usability as a learning environment and as an argumentative forum, knowledge about the most effective ways of arranging learning

situations and assignments is scanty. This paper describes a teaching experiment in which academic argumentation was practised during a ten-week e-mail course in a Finnish university. During the course two working methods were used: free debate and role play. The aim of the study was to clarify how these two working methods activated students in mutual argumentative dialogue and affected its quality. The research questions were the following: 1) How interactive were the students' messages? 2) How argumentative was the interaction? 3) What roles did the students assume during the interaction? 4) Was the quantity and quality of interaction affected by working method and gender?

Method

Teaching arrangements

Two groups (n = 5, n = 6) of students (8 female, 3 male) took part in a course in argumentation during the spring term of 1998 in the Department of Education at the University of Jyväskylä, Finland. The course involved 1) e-mail seminar discussions related to learning material, 2) lectures on argumentation (2 x 2 hours), and 3) exercises. The learning material consisted of argumentative writings taken from newspapers and periodicals as well as scientific texts. The exercises and the lectures prepared the students for the argumentative discussions relating to the learning material.

Free debate and role play were the working methods used in organizing the students' e-mail discussions. During *free debate* the students discussed sex roles in education (theme 1) and discipline problems (theme 2). Students freely selected from the argumentative writings the topics and claims they wished to defend. Thus, the students were able to focus on topics they found interesting, contradictory, or important. During *role play* the students discussed compulsory Swedish (theme 3) and physical punishment (theme 4). Here the task of half of the students was to defend a given standpoint, while the other half had the task of supporting the opposite position. In this way the discussion was polarized.

Data

The total number of messages sent by the students during the course was 326. The eight female students sent 219 (67%) of them, and the three male students sent 107 (33%). The students sent about the same number of messages on the four different themes (23% - 26%).

Data analysis

The analysis was carried out in two phases. In the first phase the messages were classified into three categories: monologue, dialogue and web-messages (c.f. Lai, 1997). A *monologue message* consisted of a student's opinion or point of view on the discussion topic but it did not include references to any messages sent during the course. A *dialogue message* consisted of references that indicated that only two students had contributed to the discussion on the topic. If more than two students were involved in the discussion the message was classified as a *web-message*. Dialogue and web-messages together were classified as interactive messages.

The second phase of the analysis focussed only on the interactive messages by taking the reference (n = 362) as the unit of analysis (c.f. Mellar & Howell-Richardson, 1999). A reference was a reply to a thought (i.e. a claim, a ground, an argument, a point of view) expressed by another student during the course. The students' references were classified along two dimensions. The first dimension (Position taking) showed whether the students disagreed, agreed or had taken a neutral position in relation to the standpoint of a fellow

student. The references indicating disagreement were further classified as *grounded disagreement* and *non-grounded disagreement* according to whether the student had grounded his/her counterclaim or not. The references indicating agreement were in turn classified into two subcategories, *elaborative* and *non-elaborative agreement,* depending on whether the writer had or had not elaborated his/her own contribution to the discussion by adding an extra ground to support a claim or by putting forward some new ideas or by approaching the issue from a new perspective. The subcategories of the neutral positions were accordingly *elaborative* and *non-elaborative neutrality.* The other reference categories were *"questions"*, *"answers to questions"*, and *"some other"* (mainly short comments).

The second dimension (Role) described the writer's role in the discussion and it consisted of six categories: problematization, attack, defence, counterattack, admission, support, and participation. In a reference indicating *problematization* a student had taken a critical attitude towards the issue in question. The writer had, for example, pointed out deficiencies in a fellow student's message or put forward alternative ways of approaching the issue. A reference classified as an *attack* included targeted disagreement with a fellow student's position. A *defence* was a reply to an attack already put forward. It indicated that the writer defended his/her original argument by clarifying the reasons given or by adducing new reasons. In the case of a *counterattack* the writer defended him/herself from an attack by reattacking the arguments the attacker had used, while in a reference classified as an *admission* the writer accepted the attacker's criticism and indicated a readiness to change his/her original argument. References classified as a *support* indicated the writer's willingness to support or strengthen a fellow student's standpoint, and in a reference classified as *participation* the writer did not reply to a fellow student's standpoint but mainly participated in the discussion by stating something about the topic. The inter-rater ($n = 37$) reliability coefficient (C) for the two variables was .87 for Position taking and .82 for Role.

Statistical analysis

The purpose of the Logit-analyses (Kennedy, 1988) was to clarify whether working method and gender affected the interactivity of the messages, the nature of the students' position taking, and the role the students assumed during the discussion

Results

Interactivity

The students wrote a total of 73 (22%) monologue messages, 153 (47%) dialogue messages, and 100 (31%) web messages during the course. The number of interactive messages (dialogue + web messages) was thus 253 (78%). The result of the Logit-analyses indicated that gender affected the interactivity of the messages: the male students produced more interactive messages than the female students (87% vs. 73%).

Position taking

More than one third (39%) of the students' references to other messages indicated that the writer had taken a neutral position in relation to a fellow student's standpoint and also elaborated the issue in question further (Figure 1). In 23% of the references a student had shown grounded disagreement and 17% of the references indicated elaborative agreement.

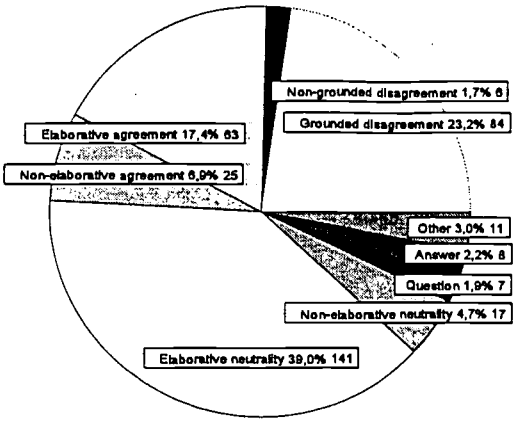

Figure 1. Students' position taking in their reply references (n=362)

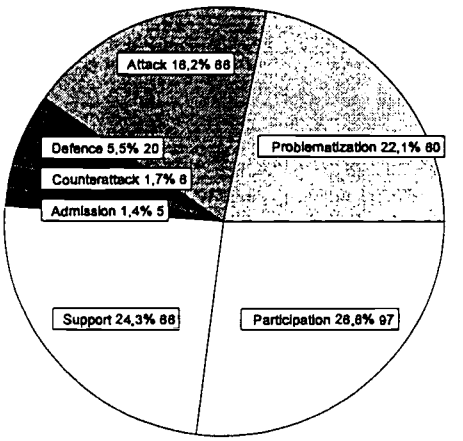

Figure 2. Students' discussion roles in their reply references (n=362)

The results of the Logit-analyses showed that working method and gender were both associated with grounded disagreement, elaborative agreement and elaborative neutrality. Working method was also associated with non-elaborative agreement. The nature of these associations is illustrated in Table 1 which indicates that the messages the students produced during role play included grounded disagreement more often than the messages they wrote during free debate (31% vs. 15%). In contrast, both elaborative (23% vs. 11%) and non-elaborative agreement (11% vs. 4%) were more common during free debate. It was also found that messages written by women contained elaborative agreement more often than those written by men (21% vs. 11%) while men's messages, in contrast, more often contained elaborative neutrality (47% vs. 33%). The interaction effects between working method and gender indicate that men produced grounded disagreement during role play more often than during free debate (79% vs. 21%) and, on the other hand, elaborative neutrality more often during free debate than during role play (62% vs. 38%). It is worth noting that women produced both grounded disagreement and elaborative neutrality equally during both of the working methods.

Role

The main roles the students assumed during the interaction (Figure 2) were participation (27%), support (24%) and problematization (22%). The most common reply to a previous attack was a defence (6%). It is, however, worth noting that on most occasions the students did not at all respond to attacks on their own arguments: although there were 66 references that indicated an attack, only 31 of them were replied to (20 defences, 6 counterattacks, 5 admissions).

Logit-analyses showed that working method and gender were associated with participation. Working method was also associated with problematization, attack, and support, and gender was associated with counterattack. The results in Table 1 show that the messages written during role play contained problematization (29% vs. 21%) and attack (27% vs. 14%) more often than the messages written during free debate. Support (31% vs. 13%) and participation (33% vs. 21%) were, in contrast, more common during free debate. In addition, assuming a supportive role was more common among women than among men (25% vs. 16%) while men assumed counterattacking (5% vs. 0%) and participatory (39% vs. 21%) roles more often than women. The interaction effect between working method and gender indicate that men assumed an attacking role more often during role play than during free debate (83% vs. 17%), while women took on an attacking role equally during both of the working methods.

Table 1. Statistically significant associations in the Logit-analyses

DEPENDENT VARIABLES		INDEPENDENT VARIABLES		
		Main effect	*Main effect*	*Interaction effect*
		Working method	Gender	Working method + Gender
Interaction variable	Interactivity		**M(87%)**, W(73%)	
Position taking variables	Grounded disagreement	FD(15%), **RP(31%)**		**M: FD(21%), RP(79%)** W: FD(42%), RP(58%)
	Elaborative agreement	**FD(23%)**, RP(11%)	M(11%), **W(21%)**	
	Non-elaborative agreement	**FD(11%)**, RP(4%)		
	Elaborative neutrality		**M(47%)**, W(33%)	**M: FD(62%), RP(38%)** W: FD(47%), RP(53%)
Role variables	Problematization	FD(12%), **RP(29%)**		
	Attack	FD(14%), **RP(27%)**		**M: FD(17%), RP(83%)** W: FD(53%), RP(47%)
	Counterattack		**M(5%)**, W(0%)	
	Support	**FD(31%)**, RP(13%)	M(16%), **W(25%)**	
	Participation	**FD(33%)**, RP(21%)	**M(39%)**, W(21%)	

Note: FD = Free debate; RP = Role play; M = Men; W = Women;
The unit of analysis is a message (n = 326).

Discussion

Most of the messages (78%) the students wrote during the course were interactive in nature. However, of these interactive messages 60% were dialogue messages consisting of interaction between two students only. In addition, the most common type of reference in the students' messages was that which indicated a neutral position - either elaborative or non-elaborative - in relation to other students' positions. Furthermore, the roles most commonly assumed by the students during the course were those of participation, support and problematization. These results indicate that one of the tasks of the course, to encourage the students to engage in active argumentative discussion with contributions by many students was not satisfactorily achieved. Principally the students did not assume an active argumentative role during the course but tended merely to either support or ignore each others' arguments. The small number of replies to other students' attacks on one's position also indicates that Finnish students prefer to keep silent than respond to criticism. Difficulty in getting Finnish students to engage in argumentative discussions has also been found in previous studies (Marttunen, 1998; Steffensen, 1996).

The comparison of the results between the different working methods showed that when the students were assigned opposed roles in the role play sessions, critical discussion and argumentation increased notably, while during free debate the students mainly agreed with each other. Participation and support as roles were typically emphasized during free debate as well, while role play activated the students to attack each others' opinions or, at least, to take a problematizing role in the discussion. Since both the discussions between the students were more critical and the students' roles became more argumentative during

role play, the results suggest that role play as a working method in an e-mail environment better motivates students to engage in argumentative discussions than does free debate.

The results concerning the difference between the three men and eight women also indicated that the women, in particular, tended to indicate agreement with their fellow students while the men's position in relation to other students' positions was mainly neutral. The women also tended to assume a non-argumentative supportive role during the discussions while the main roles of the men, participation and counterattack, were more argumentative in nature. The interaction effects between working method and gender (Table 1) indicated that role play activated, in particular, the male students to present grounded disagreement and to assume an attacking role. During free debate, in contrast, the men tended to show elaborative neutrality towards the other students' positions. Among the women the use of different response types and roles were distributed more evenly between the two working methods. The results suggest, first, that in general men seem to be more prone to engage in critical and argumentative discussions than women, and second, that men also seem to react more sensitively to variation in the working method during their studies.

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