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USING CMC TO DEVELOP ARGUMENTATION SKILLS IN CHILDREN WITH A 'LITERACY DEFICIT'

1. INTRODUCTION

Constructive argumentation is a process of confronting cognitions – it is a process of deliberating between participants' diverse positions and reasons for believing in them (see Andriessesn, Suthers & Baker, this volume). This chapter is concerned with how we create learning communities that enable children to express and confront their cognitions. In particular, how we create a climate in which children are encouraged to reason about the evidential support for, and consequences of their beliefs. The chapter will focus on a project aimed at facilitating a learning culture in which children can develop argumentation skills necessary to demonstrate "knowledge transformation" as opposed to "knowledge telling" (Bereiter & Scardamalia, 1987). The work described here forms part of a project in progress at the Chapeltown and Harehills Assisted Learning Computer School (CHALCS) with the wider aim of improving children's literacy.

There are many young people who do not reach their educational potential because of a "literacy deficit", in which reading comprehension and written communication skills lag behind the development of other skills. CHALCS is a community centre with charitable status created to enable such children to study out of school hours. The CHALCS literacy programme achieves good results with young children.

However, some children (in the 13-15 age group) continue to fall further behind. One reason may be that in addition to basic literacy, for older children the curriculum increasingly demands "knowledge transformation" rather than "knowledge telling" (Bereiter & Scardamalia, 1987). Children of this age must learn not only to form and articulate their opinions but also to justify them and to select what is relevant to the context.

This chapter addresses the question of whether synchronous text-based Computer Mediated Communication (CMC) can enhance these students' skills by motivating them to practice constructing such justifications through written debate. Recent research has suggested that online synchronous text-based discussion (e.g. Chat) can motivate children to write (Warschauer, 1999). However, if Chat is to help students develop argumentation skills it is first necessary for students to develop a culture of interaction in which constructive debate *is possible*. For this, children first need to learn to focus on the topic to be discussed, to listen to, engage with and respond sociably and constructively to each other's contributions. This makes considerable demands on the attention and concentration of children. These basic collaborative skills may be considered pre-requisite to improving and developing debating skills and, perhaps, some aspects of skilled writing such as: an awareness of audience, the ability to see things from another person's point of view, to put oneself in the place of the reader and to imagine and sustain alternative and contrasting perspectives or "voices".

2. THE RESEARCH CONTEXT

The study to be reported here investigates whether using CMC Chat to debate topics (which the children choose) improves the quality of written argumentation within this medium (for children in the 10-15 age group). On-going research will investigate whether there is a commensurate improvement in face-to-face debate and argumentation in individual students' extended written compositions. The context for this research is the Chapeltown and Harehills Assisted Learning Computer School (CHALCS). CHALCS is not a school as such, but a community centre that provides an environment for children to study out of school hours. CHALCS is located in one of the poorest areas of Leeds and aims to combat the high disaffection and low expectation that can further undermine educational goals and the individual achievements of children living in the area (http://www.chalcs.org.uk).

Most students at CHALCS are of African-Caribbean or South Asian ethnic origin. For many students, English is an additional language. The majority of students hear about CHALCS by "word of mouth" but teachers also occasionally refer students to CHALCS. Attendance is voluntary and both paid and volunteer tutors provide tuition. CHALCS provides timetabled classes with formal tuition (not tied to the National Curriculum), and open access sessions. The average CHALCS class contains 14-18 students. The main fields of study are maths, science and IT - primarily for students aged 11-18 years. However, the literacy programme is aimed at children from 8-15 years. Classes take place in the evenings (6-8 p.m.) and on Saturday mornings. There is a separate project in the same building that runs daytime "Exclusion Programmes" for children who are excluded from school; some of these students also sometimes attend the twilight classes. Open access sessions take place between 4-6 p.m. In these sessions pupils come to use the computers for homework or other educational activities.

Computers are integral to the work of CHALCS and computing facilities are provided both in order to enable students to develop the IT skills they need to be competitive in the modern job market but also to enhance student motivation. The centre offers PCs on a Novell network running either Windows 95 or 98. A range of software is available including Microsoft Office; Internet access is also provided.

The CHALCS literacy programme has proved successful with younger children. However, some children may fall behind again later. Their basic skills may limit their confidence when writing essays and so prevent them from "moving on" to develop critical essay writing skills. In designing a new programme (targeted at children aged 10-15 years), the aim was to liberate children from the limitations of their basic skills (spelling and grammar) whilst encouraging them to articulate and justify their opinions in writing. Having built confidence through practice in written debate, it was hoped that newly acquired argumentation skills could be built upon when scaffolding the writing of longer and more formal pieces of non-fictional writing following the Chat programme. Since this case-study was to form a small-scale evaluation of an authentic classroom environment in which the researcher worked with the tutor to support him in the design and delivery of the new programme, an experimental approach was not appropriate. Instead the approach was to study the progress of individual children and the quality of their group interaction through the Chat medium over time.

3. RELATED RESEARCH: TOWARD A MODEL OF WRITING PROCESS

3.1 Towards Knowledge Transformation

Bereiter & Scardamalia (1987) distinguish between "knowledge transformation" and "knowledge telling". Knowledge telling may be defined as the simple disgorging of everything a writer knows about a topic whereas knowledge transformation is the process of converting content into a text that is appropriate to the context and audience, by selecting and justifying relevant material, genre and structures. Bereiter and Scardamalia suggest Knowledge in this context is composed of structural knowledge (of linguistic structures and strategies) and world knowledge (what is known about the subject). When the essay demands a critical discussion rather than a narrative, relevant structural knowledge must include knowledge of what makes a weak or a strong argument and the ability to apply this knowledge when reasoning about the selection and manipulation of content material.

Theories of scaffolding (for example, Bruner 1978; Vygotsky, 1978) suggest that developing writers can learn to solve problems involved in transforming knowledge into text more easily when working with a peer than when working alone. The exposure to the different experiences and approaches of peers may help students to assimilate new writing schemata or accommodate existing ones. Flower (1994) shows how structured collaborative planning of written work can enable students to "construct a robust strategy for being a constructive planner" (p143). Through collaboration, students can also learn to use writing strategies that are more mature than those they are currently able to use on their own. However, Burnett (1993) argues that collaboration in writing is only effective when the co-authors engage in "substantive conflict" rather than consensus. The concept of substantive conflict and its possible relationship to the development of writing is discussed further in section 3.2 below.

3.2 Argument

When children first start writing at school they are largely expected to write narrative, whether factual or fictional (Andrews, 1995). As their writing develops, they are expected to extend their skills to argumentative writing. However, there is no clear progression from narrative to argument and, as Andrews demonstrates, children (and many adults) often require scaffolding to develop augmentative writing skills. Argumentation is seen as a complex of Speech Acts (Searle, 1969) performed by advancing a series of statements linked to an expressed opinion with the intention of convincing someone of your point of view (Tindale, 1999). The series of statements may be thought of as the premises of argument, and the expressed opinion the conclusion (see e.g. Toulmin, 1958). However to deserve the name argument either the premises or the link between premises and conclusion must be challenged in some way: arguments are oriented towards the resolution of dispute or conflict (Tindale, 1999). The notion that conflict (inconsistency) and argument (rational dialectic as a mechanism for resolving inconsistency) develop our understanding is central to both Piaget's theory of learning and also to attempts by philosophers to define "rules of engagement" or "dialogue games" that facilitate the pursuit of knowledge by eliminating weak arguments. Instances of weak arguments (or fallacies as they are sometimes called) might include those that rely on appeals to authority "it is so because x (or I) say it is so", are circular[1] or question begging.[2] (See e.g. Walton (1984) for a review of dialogue games aimed at avoiding such weak arguments). When asked to debate an issue, children (and many adults) may:

- Advance statements without filtering those statements for relevance to the particular discussion question;
- Repeat statements that have already either been accepted or are currently disputed;
- Advance statements without checking first that they are consistent with their own statements;
- Fail to deny or infer valid conclusions from premises or infer invalid conclusions from them;
- Fail to recognise and/or explicitly challenge such inconsistency;
- Fail to advance statements that are known to support counter-arguments;
- Deny earlier acceptance of a premise when an unwanted conclusion is inferred from it.

For this reason it has been suggested that opportunities to learn the skills of argument "learning to argue" as opposed to "arguing to learn", should be provided within the curriculum. In other words, there should be structured opportunities within the curriculum where the central aim is not to learn about X (the laws of physics, or a turning point in history), but rather, to learn how to argue (see, for example, Veerman, 2000).

Kuhn et al (1997) showed that people were better able to justify their opinions after discussing opposing views with others in pairs. This supports Burnett's findings that collaborative discussion that involves "substantive conflict" improves writing quality. Burnett identifies four types of decision-making:

> "(1) immediate agreement; that is, making an unelaborated decision about a single point, (2) deferring consensus by elaborating a single point, (3) deferring consensus by considering alternatives, which is one kind of substantive conflict, and (4) deferring consensus by voicing explicit disagreement, which is another kind of substantive conflict" (p.134).

Burnett claims that co-authors who engaged in (3) and (4) produced better quality writing than those who did not. However, Burnett also says that (2) can be constructive. It follows from this that simple agreement between co-authors is less likely to produce the type of collaboration that yields good quality writing.

Learning to engage in such processes is not easy. As Schwartz & Glassner (this volume) point out, students don't know how to link natural arguments to beliefs and knowledge. They can also tend to take on board arguments from sources they regard as authoritative without questioning them. However when they do question alternative cognitions, more elaborate arguments are likely to be expressed and these can help to break through entrenched positions (see also Andriessen & Erkens, *et al*., this volume; Jermann & Dillenbourg, this volume).

Mercer & Wegerif (1999) make a similar distinction to Burnett concerning children's talk. They categorised talk as exploratory, disputational or cumulative, where exploratory talk comes closest to satisfying Burnett's conditions for deferment of consensus. Mercer & Wegerif concluded that practice in engaging in "exploratory talk" improved children's reasoning skills on independent reasoning tests.

An important research question is whether learning to engage in debate-style "substantive conflict", in which students learn to address each other's points by responding to them and reinitiating discussion on them (in ways that move beyond simple disputative forms of dialogue to forms characterised by relatively high levels of inquiring, challenging clarifying and justifying), can lead to an improvement in the quality of argument in other non-interactive individual compositions of written argument. A related point is whether the use of electronic Chat, which shares some characteristics of debate through its synchronous, interactive nature, can form a more effective bridge between media to support such transfer. The longer-term goals of our on-going programme of research also include an examination of the effect of face-to-face discussion on argumentative writing, which may provide some insight into these questions.

However, in order to test whether such effects can be found it is first necessary for students to develop a culture in which constructive debate can take place. For this children need to learn to focus on the topic to be discussed, to discriminate between what is relevant and what is not, to engage with each other's comments – to listen to each other's points of view, reflect upon them and respond to them. This demands focused attention from children. Developing such basic social collaborative skills may be thought of as "pre-requisite" for any programme aimed at improving the quality of debate. In the work presented here we test whether electronic Chat is a suitable medium for developing the necessary collaborative culture and examine any concurrent effect on the quality of children's' written arguments within the Chat medium.

3.3 Computer Mediated Communication Supporting Writing and Argument

Studies on the use of computers in writing have demonstrated that that their use can reduce writing apprehension and increase fluency (for example: Neu and Scarcella, 1990; Pennington, 1996; Phinney, 1990; Warschauer, 1999). Most of the studies into computers and writing have been carried out using word processing tools. Some studies have, however, made similar claims for synchronous Computer Mediated Communication (e.g. Sullivan & Pratt, 1996; Beauvois, 1997; Warschauer, 1999).

We believe that a synchronous text-based CMC tool such as Chat can provide a rich context for "exploratory talk" and "substantive conflict" (as identified by Mercer & Wegerif, 1999 and Burnett, 1993). When used to practice debate such tools should also lead to an improvement in children's argumentation and reasoning skills as well as the benefits to writing identified by Pennington and others.

Another claim made for CMC is that it enables people to participate more equally in a discussion (Sullivan and Pratt, 1996; Warschauer, 1996). In particular, Warschauer (1996) compared face-to-face and electronic discussion with racially mixed groups and found that ethnicity was a factor in limiting a student's face-to-face participation but did not restrict participation in CMC. In a mixed group such as a CHALCS class, this could be very beneficial.

4. FRAMEWORK FOR THE LITERACY PROGRAMME

The CHALCS literacy programme was designed to target 10-15 year olds, as that is the group that appears to benefit least from existing provision. Following the hypothesis that online synchronous text-based discussion and computer-assisted writing will provide effective scaffolding of non-fictional writing, the new programme, called

Discussion and Reporting Electronically (DaRE) is following a writing process model (as described by Flower and Hayes, 1981) that consists of the following phases:

- Group-based brain-storming of content ideas;
- Focused document structure planning; individual and group composition;
- Individual and group reflection on the process and product of writing;
- Synthesis of group ideas and the integration of critical feedback;
- Presentation of work to an identified audience.

Within DaRE these phases are incorporated into the following elements:

- Generation of topic themes via an asynchronous bulletin board;
- Synchronous text-based discussion of a topic;
- Collaborative planning and writing of a summary report;
- Presentation of the report to the group;
- Receiving critical feedback from tutor and peers through an online bulletin board;
- Collaborative compilation of the discussion summaries into a class 'webzine' to be published on the CHALCS public web site for other CHALCS pupils, parents and friends of the project to read.

5. PILOT STUDY

The study reported here concentrates on the results of phase 1 – synchronous text-based discussion of topics. The literature reviewed above suggests that regular use of text-based synchronous Computer Mediated Communication for debate might reasonably be expected to lead to:

- An increased fluency and ability to express on-topic opinions in writing (e.g. Phinney, 1990; Pennington, 1996);
- An enhanced awareness of context including greater awareness of what is relevant and what is irrelevant (Veerman, 2000);
- A greater willingness to listen to others including responding to the points made by others (e.g. Warschauer, 1999);
- An increased ability to develop and support arguments (in similar ways as described by Burnett, 1993; Kuhn et al, 1997; Veerman, 2000);
- A greater willingness to include and affirm others (e.g. Sullivan and Pratt, 1996).

Therefore a small-scale study was devised to test the value of synchronous CMC tools within the DaRE context in order to determine the extent to which such benefits accrue within the quality of transcripts over time. The study used a synchronous bulletin board to start and conclude the discussions with the main debate being conducted through the medium of synchronous online Chat.

5.1 Method

5.1.1.Materials

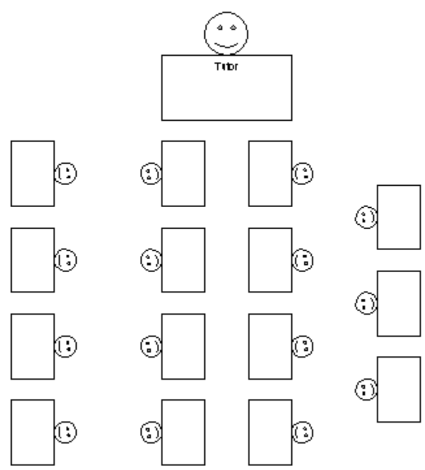

Figure 1. The CHALCS classroom.

The classroom is arranged with the computers in a double horseshoe formation with the teacher's computer at the head of the class. Figure 1 shows the layout of the CHALCS classroom. WebCT®, a web-based virtual learning environment, has been installed at CHALCS. WebCT combines a range of tools for managing courses and course materials including the facility to display and link lecture notes; a student project presentation area; e-mail; bulletin boards and Chat, although for this study only the Chat and bulletin board features were used. These are illustrated in figures 2 and 3.

5.1.2 Procedure

Each class lasted for two hours and was led by a tutor from the CHALCS literacy team. In the early weeks of the study, a researcher was also present.

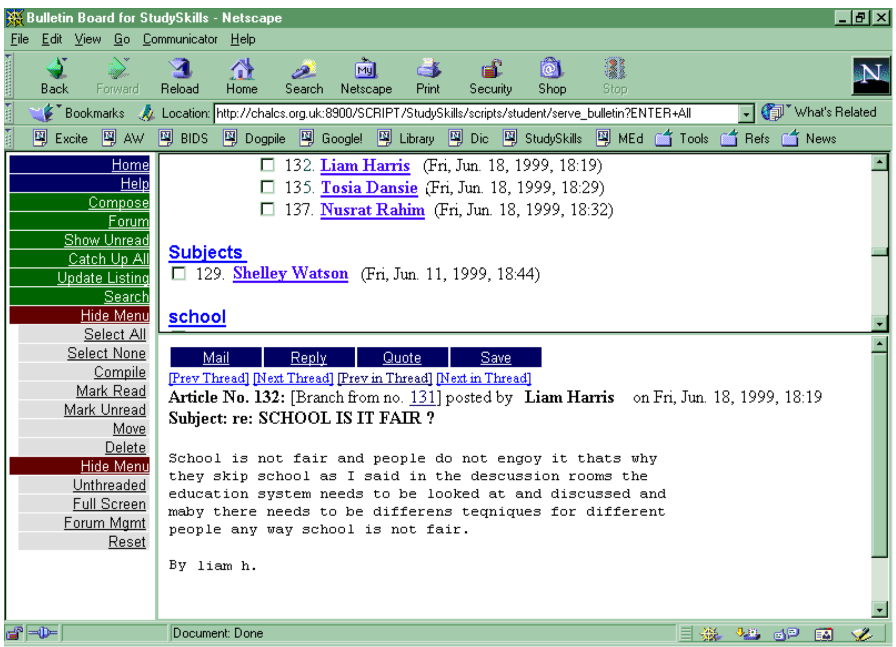

Figure 2. The Bulletin Board 'Starter'.

Although the intention of the researcher was to make observations, in practice the children needed considerable support with managing the technology. Occasionally the researcher also joined the discussions, taking the role of a second tutor. The first part of the session (usually one hour but occasionally longer) was given to the study tasks. The teacher posted the discussion topic to the bulletin board (see figure 2) before the start of the session. Topics were drawn from the children's suggestions based on the work of the previous week. The children read the posted question and used the Chat rooms to discuss the topic (see figure 3). At the end of the session each child composed and posted a reply to the bulletin board.

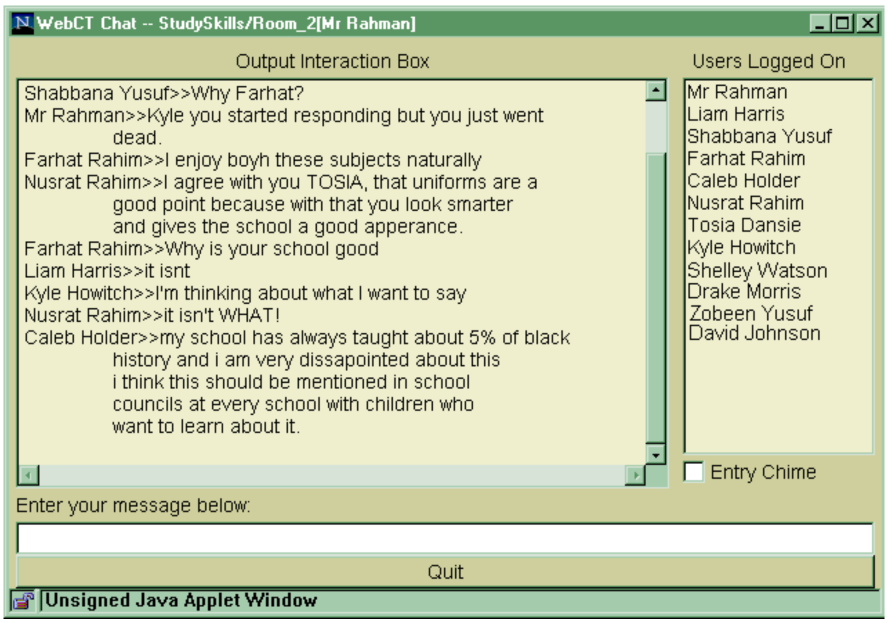

Figure 3. The Chat Tool in Use.

After the session, the tutor read the Chat logs and bulletin board postings before formulating a new discussion topic. The remainder of the class was used for other activities, which were not part of the study, such as reading comprehension, homework and practice for Key Stage 3 Assessments. These types of activity would have filled the entire session had the CMC discussions not been introduced.

Figures 3 illustrate the Chat tool in use. Please note that in these figures, and in all the Chat examples in subsequent tables, the children's names have been changed in order to maintain anonymity. Nineteen children took part: Tables 1 and 2 show the composition of the group.

Table 1: Children in the study cohort by sex and ethnic group.

	Girls	Boys
Asian (Pakistani)	5	-
West Indian	4	5
African	1	-
Arabic	-	1
Arab/Asian	-	1
African/White	-	1
White	1	-
Total	11	8

Table 2: Ages of the children in the study cohort.

School year (age)	Number of children
6 (10-11)	1
7 (11-12)	4
8 (12-13)	6
9 (13-14)	7
10 (14-15)	1

The children were drawn from eleven local schools with one child who had been permanently excluded from school. There were 12 logged Chat sessions in all. Of these, six sessions (three from before mid-term and three from after mid-term) were taken for analysis.

5.2 Results – Overall Impressions

This section presents some general impressions based on frequency count data. Six of the twelve Chat sessions were analysed. These six sessions are felt to be representative - half the total number of Chat sessions were analysed and they are selected at roughly equal intervals throughout the programme. Data are presented on the number of words, turns, turns on-task, and the number of turns containing reason moves for these six sessions (Walker & Pilkington, 2001). This is supplemented by a more detailed look at just the first and last of the sessions based on applying the DISCOUNT scheme's (Pilkington, 1999) Exchange Structure Analysis and Move analysis. In the first session only, participants split into two sub-groups in two different Chat rooms instead of staying in one Chat room. Where tables include data relating to session one the two sub-groups are shown as group 1 and group 2. In all subsequent sessions children used the same Chat room. Tables 6-9 show the number of reasoning moves in relation to the numbers of other kinds of move for the first and last Chat sessions. Impressions gained from these analyses are discussed more closely in section 5.4, which looks qualitatively at data from the six analysed sessions and provides illustrations of the dialogue. Examples illustrating the coding of turns (for Exchange Structure, Moves and whether on or off task) are given in the appendix.

5.2.1 Increasing Fluency and Ability to Express Opinions

Table 3 suggests that children's turns increased in length and complexity during the study programme (see also Walker and Pilkington, 2001). However, although the number of words increased over time, there was a trend towards fewer longer and more thoughtful turns. The table also suggests children became more focused on the task over time with a shift towards fewer off-task turns. The topics chosen by the children also change over time.

Table 3. Overall Results: Increasing fluency, complexity, and ability to discriminate what is relevant

	Topic	**Words**	**Turns**	**Mean turn length**	**Turns on task**
30th April	**Aliens**	2021	373	5.42	25.2%
7th May	**Pop Music**	1880	323	5.82	44.0%
14th May	**TV**	831	219	3.79	78.0%
18th June	**Is School Fair?**	1127	76	14.83	78.9%
2nd July	**Women in Sport**	883	75	11.77	93.3%
9th July	**Family Roles**	1549	187	8.28	80.7%

In later sessions the topics are more likely to prompt an interesting debate. Taken together these results seem to suggest an increased awareness of appropriate content and audience. However, in order to see if this is the case a more detailed look at changes in contributions over time is necessary. In the early sessions, there were more turns in a discussion but the turns were significantly shorter than in later weeks. On 30th April only 6.9% of turns were more than 10 words long including only 0.5% more than 20 words long. By 9th July, 23% contained more than 10 words with 10.6% more than 20 words long. The analysis of moves (speech acts) per turn (see section 5.2.4) further supports this view that the number of moves per turn increased. As students' turns became more complex they became longer and tended to consist of more than one move per turn.

5.2.2 Increasing Awareness of Context and Relevance

Accompanied by the changes described above, a more striking change was taking place in the degree to which the children focused on the topic or question to be debated. Turns were designated on task, off task or social/organising (relating to managing the dialogue and its participants).

Table 4. Turns on-topic, comparing the first and last Chat sessions.

First Session, 30th April, Aliens: Turns on task by Group					
	Disruptive	**Off task**	**On task**	**Social/ Organising**	**Total**
Group 1	51	18	30	42	141
% of total	36.2	12.8	21.3	29.8	-
Group 2	40	22	64	112	238
% of total	16.8	9.2	26.9	47.1	-
Total 1 & 2	91	40	94	154	379
% of total	24	10.6	24.8	40.6	-
Last Session, 9th July, Family Roles: Turns on task					
	Disruptive	**Off task**	**On task**	**Social/ Organising**	**Total**
	2	0	151	47	200
% of total	1	-	75.5	23.5	-

Turns were marked disruptive if they were judged to be very distracting or involved behaviour such as insulting another participant. (Marked up examples are illustrated in the appendix.) From Table 4 it can be seen that there was a marked decrease in the amount of disruptive and off-task behaviour between the first and last session. Group 1 in session 1 showed a particularly high instance of trading insults as a form of social interaction. This behaviour had declined to near zero by the last session. This was accompanied by a large increase in on-topic talk – an increase from around ¼ to ¾ of the dialogue turns. Some of this increase resulted from a decrease in the need for students to try to regulate the participation of other students – indicated by a decrease in the number of social and organising turns. Thus, over time, students were less likely to need to ask each other to "shut up", remind each other to talk about the topic, or ask each other to respond to what they had previously said. This analysis is supported by the more detailed move (speech act) analysis presented in section 5.2.4 and in the qualitative discussion of results (section 5.3). This increase in "focus on task" may be seen as indicative of "having a more interesting debate", certainly of being more engaged in the debate and this may relate to the children's choice of topic – children tended to propose topics that had greater potential for rich debate later in the programme. This may itself reflect development of structural knowledge or "learning what makes an interesting topic for debate".

5.2.3 Addressing the Points of Others – Exchange Structure Analysis

The first session (30th April – Aliens) and the last session (9th July – Family Roles) were analysed in more detail using the DISCOUNT scheme (Pilkington, 1999).

Table 5. Exchange Structure Analysis of first and last Chat Sessions showing extent of participant'.

First Session, 30th April, Aliens: Exchange Roles by Group				
	(I)	**(R)**	**(RI)**	**(R->I)**
Group 1	87	41	9	2
% of total	62.6	29.5	6.5	1.4
Group 2	126	69	33	2
% of total	54.8	30	14.3	0.87
Total 1 & 2	213	110	42	4
% of total	57.7	29.8	11.4	1.1
Last Session, 9th July, Family Roles: Exchange Roles				
	I	**R**	**RI**	**R->I**
Total	86	76	33	0
% of total	44.1	39	16.9	-

Two levels of the DISCOUNT analysis scheme were used: Exchange Structure Analysis (ESA) and move analysis. The results of the ESA analysis are reported here whilst the results of the move analysis are discussed in section 5.2.4. ESA compares the rate of Initiating (I) with Responding (R) and Reinitiating (RI). Reinitiating involves not providing an expected responding turn but instead producing a new turn within the same exchange that requires resolution before the previous exchange can be closed. The most usual instance of this is when seeking clarification or when challenging the previous turn. This is distinguished from Responding (closing a previous exchange) and then Initiating (beginning a new exchange) within the same turn. The latter is called role swapping as it serves to change who holds the initiative in dialogue from one participant to the other (marked R->I).

In the first session only (as explained earlier) participants used two different Chat rooms instead of one Chat room. This is shown as group 1 and group 2 for session one but in both groups there was a relatively high rate of initiating compared with responding and reinitiating. Particularly, in group 1, turns did not tend to involve the challenges and clarifications typical of reinitiating. Overall this pattern suggests dialogue that is only loosely coherent in the sense of participants engaging with each other's points and a dialogue low in substantive conflict. Overall, early dialogue was characterised by individuals stating their opinions rather than responding to those of others. The dialogue in the last session shows a relative improvement with a better balance between initiating and responding turns and with higher levels of reinitiating. The move analysis presented in section 5.2.4 further supports this impression.

5.2.4 Developing and Supporting Arguments

The analysis of moves (speech acts) per turn (total number of moves in the dialogue session divided by the total number of turns in the dialogue session) indicated an increase from 1.1 moves per turn on 30th April to 1.6 moves per turn by 9th July. It seems that as students' turns became longer they tended to consist of more than one move per turn. This appears to be due to an increase in the number of reasons supporting opinions since the proportion of these types of moves tended to increase whilst the proportion of other kinds of move tended to decrease or stay about the same (though there was a much more modest increase in justifications than in reasons). Types of reasoning move include reasons offered to support a statement within an initiating turn (Reason in Table 6), and reasons offered in response to a challenge by way of justification (Justify in Table 6). The combined total for informative, comparative and narrative moves was 3 times the total of justifications and reasons on 30th April but only 1 ½ times that of justifications and reasons on 9th July. This indicates that many more agreements and disagreements were supported with reasons than had been previously.

Table 6. Comparison of reasoning and justification moves for first and last Chat.

First Session, 30th April, Aliens: Reasoning Moves by Group		
	Justify	**Reason**
Group 1	1	0
% moves 1	0.7	-
Group 2	4	7
% moves 2	1.5	2.6
Total 1 & 2	5	7
% of total	1.2	1.7
Last Session, 9th July, Family Roles: Reasoning Moves		
	7	38
% moves	2.4	13.1

Table 7. Comparison statement moves for first and last Chat.

First Session, 30th April, Aliens: Statement Moves by Group				
	Agree	**Disagree & No-commitment**	**Inform & Compare**	**Narrate**
Group 1	7	3	49	4
% moves 1	5.0	2.2	35.3	2.9
Group 2	12	18	45	0
% moves 2	4.4	6.6	16.5	-
Total 1 & 2	19	21	94	4
% of total	4.6	5.1	22.8	1.0
Last Session, 9th July, Family Roles: Statement Moves				
	30	16	73	0
% moves	10.3	5.5	25.2	-

Table 7 shows that the number of informative statements stayed about the same though the number of agreements increased whilst the number of disagreements did not. This difference is probably accounted for by changes in behaviour towards more affirming and encouraging remarks (including telling others when you agree with their position). On-task disagreements may have increased but are likely to have been compensated for by a fall in off-task and disruptive disagreements.

Overall there was no increase in the amount of questioning indicated in Table 8, particularly the types of questioning indicative of substantive conflict. There was a moderate increase in the proportion of clarification questions but the number of challenges (principally ‘why?’ type questions which ask for justification) was not higher in the last session. This can probably be accounted for by a large fall in off-topic and disruptive challenges, counteracted incompletely by an increase in on-topic challenging. On 30th April the combined total of off-topic disruptive or social challenges was twice that of on-topic challenges whilst on 9th July all the challenges were on-topic.

Table 8. Comparison of questioning moves for first and last Chat.

First Session, 30th April, Aliens: Questioning Moves by Group				
	Challenge	**Clarify**	**Explore (What if?)**	**Inquire/Request**
Group 1	9	0	0	19
% moves 1	6.5	-	-	13.7
Group 2	27	2	2	42
% moves 2	9.9	0.7	0.7	15.4
Total 1 & 2	36	2	2	61
% of total	8.7	0.5	0.5	14.8
Last Session, 9th July, Family Roles: Questioning Moves				
	21	9	1	31
% moves	7.2	3.1	0.3	10.7

5.2.5 Creating an Inclusive and Safe Learning Culture

That conflict was not substantially reduced over time but rather changed from less productive and supportive types of off-topic challenging to more productive on-topic challenging is further supported by evidence of a fall in the number of moves in the categories “instruct”, “feedback” (principally negative feedback) and “meta & nominates” (moves about the dialogue itself and turns directed at an individual child).

See Table 9. As children became more focused on the discussion they had less need to remind each other to talk about the topic. This is consistent with an improvement in willingness to listen to each other's points of view.

In general it seems that the discussion became "safer" and more "affirming" for children to take part in over time as the amount of disruptive behaviour and negative feedback decreased whilst positive feedback increased. According to Tuckman's (1965) developmental sequence of group development, we would expect to see this happen as the group moved from the 'storming' to 'performing' phases. However, to see if this is really the case, it is necessary to look at the content of these moves in context and this is explored further in the next section.

Table 9. Comparison of organising moves for first and last Chat.

First Session, 30th April, Aliens, Organising Moves by Group					
	Instruct/ Suggest	**Meta & Nominates**	**Close**	**Open**	**Feedback**
Group 1	18	16	6	7	0
% moves 1	12.9	11.5	4.3	5.0	-
Group 2	29	47	3	20	15
% moves 2	10.62	17.2	1.1	7.3	5.5
Total 1& 2	47	63	9	27	15
% of total	11.4	15.3	2.2	6.6	3.6
Last Session, 9th July, Family Roles: Organising Moves					
	10	30	2	10	12
% moves 6	3.4	10.3	0.7	3.4	4.1

The fall in the number of opening and closing moves shown in Table 10 is an artefact of children swapping between groups in session one. In the last session (as in all other sessions bar the first session) children entered one room and tended to stay there giving approx. one opening "Hi!" and one closing "Bye" move per child as they entered or left the Chat.

5.3 Qualitative Discussion of Results

5.3.1 Increasing Fluency and Ability to Express Opinions

Over time on-task contributions became longer, more complex and more articulate in expressing a point of view. Thus, Table 10 illustrates that in the first session many turns involved only a few words and often tended to involve simple agreement and disagreement. By the last session, multi-sentential on-topic turns like those in Table 11 were much more common.

Table 10. Simple agreement and disagreement from 30/4

16	Paula	I think that there is no such thing as aliens, Sahmeena
17	Farhat	same here
18	Farhat	whats up with you nusrat
19	Sahmeena	Puala- I think they do
20	Farhat	both the sisters have the same view
21	Paula	Well I don't think so

Table 11. More complex and articulate expression of opinions from 9/7.

37	Sahmeena	Some religions says that the farther has to work and the mother look after the house and children. But some mothers work as well.
38	David	I think that in the home the jobs between men and women should be equal, because I think that for too many years in the past not enough work has been done by men in the house, and also recently there has been quite alot of programmes on televison about househusbands. I also definitly disagree with Shabbana

5.3.2 Discriminating What is Relevant - Topic Selection and Focus

In the earliest session, there were many more off-task turns. In the example in Table 12 (which continues the dialogue in Table 10), the children are not seriously addressing the question and seem more interested in social banter.

Table 12. Poorly Focused Discussion from 30/4.

22.	Sahmeena	Puala I may have seen one[3] ....you
23.	Paula	You must be joking
24.	Sahmeena	Puala I'm not joking
25.	Paula	Whatever
26.	Paula	Sahmeena you must be mental

Table 13. More highly focused discussion from 9/7.

12	Sahmeena	The question that has to be answered is 'who should look after the family'? What do you think faz?
13	Liam	the babiesitter
14	Farhat	both mother and father should look after the family
15	Shabbana	No Zobeen because our mum works and so does our dad. Also everone does the house work in the house not only mum
16	Mustafa	hello
17	Sahmeena	I think both the parents hold the responsibility of organising the house.
18	Zobeen	Liam what if there are no babysitters???
19	Farhat	thats true shabbana

In contrast by 9th July (Table 13) the children are giving the topic much more focused attention. There is also a marked difference in the nature of off-task turns when the early and later sessions are compared. In the early sessions, prolonged off-task exchanges are commonplace. The content of the exchange in Table 14 has no relevance to the topic (aliens). In the later sessions, however, off-task exchanges like this are rare.

Table 14. Typical off-task exchange on 30/4.

29	Jabir	SO YOU THINK YOU ARE A RICK MAN
30	Elodie	drake your sad MAN!
31	Drake	Nuff respect to DMX Ruff Ryders
32	Tosia	What the heck is a rick man
33	Drake	Wobble Wobble
34	Elodie	easi drake ruff ryders are RUFF. p.s your lip drake

5.3.3 Addressing the Points Made by Others – Being Prepared to Listen

In earlier sessions much of the dialogue tended to consist of individuals talking without engaging with each other, see Table 15.

Table 15. Each individual initiating without responding to each other. 30/4.

27.	Paula	Planet Earth what about you
28.	Shabbana	NUSRAT TALK
29.	Paula	what happend to Nusrat
30.	Shabbana	WHAT DO YOU THINK PAULA
31.	Paula	Get lost shel
32.	Zobeen	Farhat talk
33.	Shabbana	HI ZOBEEN#
34.	Sahmeena	EARTH CALLING PUALA ANYONE HOME?
35.	Zobeen	Hi Shabbana can YOU talk to me?
36.	Shabbana	ZOBEEN ZEENAT LOVES YOU#

Table 16. Each individual addressing each other. (9/7).

42	Shabbana	no if you are referring to Islam that is not true because mums and dads bothe should have the right to work
43	Mustafa	I agreeyes
44	Liam	why did Islam come into it
45	Mustafa	because it did
46	Liam	why though
47	Shabbana	because it did Liam
48	Drake	because it did
49	Sahmeena	Becuse In that religion the farther has to work
50	Liam	yes but why
51	Mustafa	because it came up
52	Liam	what
53	David	Why
54	Zobeen	Religion is religion Liam!

In later sessions participants responded directly to each other and challenged each other as the discussion became more focused and more on-topic. Although, as the example in

Table 16 shows, it does not follow that the children are adept at providing non-circular justifications in response to such challenges.

5.3.4 Developing and Supporting Argument - Towards a more Reasoned Debate

In addition to evidence that children acquired the prerequisites for reasoned debate, such as being able to focus on the topic, address each other's contributions and avoid disruptive and offensive behaviour, there was also evidence that over time children produced stronger arguments. As the example in Table 16 illustrates, over time children learnt to challenge repetitive statements (though this could still be circular). In Table 16 Liam repeatedly challenges repetitive statements and, although not receiving a completely satisfactory explanation in the end nevertheless his persistent challenging is rewarded with two alternative statements "because in that religion the father has to work" and (finally) a link back to Sahmeena's original statement to which this extract refers (see Sahmeena in Table 11). Thus, Zobeen's last comment "religion is religion!" presumably means something like 'it came up because Islam is an example of a religion and Sahmeena mentioned some religions'.

The ability to generate challenges thus represents progress towards substantive conflict and (potentially) ultimately towards knowledge transformation. Note: it does not follow from evidence of constructive argument in written Chat debate that individual children writing on their own outside the Chat situation will show evidence of constructive argumentative writing. However, it is argued that engaging constructively with the points of others through the production of justifications in response to challenges is evidence of a progression towards an awareness of audience and the selection and manipulation of knowledge to "persuade" that audience through writing. Challenging others viewpoints was also evident in Table 13 this time Shabbana uses a 'disagree' move ("No Zobeen…") followed by a 'justify' move ("because our Mum works and so does our Dad"). Later, Zobeen uses a 'what if' style 'explore' question to expose the limitations of Liam's solution (to get a baby-sitter).

Table 17. On topic but not advancing the debate (30/4.)

11	Drake	I would stab it,shoot it, blow it up, and then bun a big fat juicy spliff

Table 18. Justifying and reasoning on-topic (9/7).

85	Drake	Not always in some families the feminine gender works and the father sstays home and works!
184	Drake	Men and women should be treated equally because it takes them both to make a waaaaaaaa!

As already illustrated in Table 14, Drake could be particularly disruptive in earlier sessions. In Table 17, Drake (30th April) is describing what he would do if he met an alien. Although he is technically on-task, his creative/narrative remark is not appropriate for a debate. In Table 18 on the other hand, Drake both responds and initiates in the discussion with two contributions that show that he has thought about what other people have said, can evaluate their comments and can put forward reasoned opinions.

Table 19. Unelaborated opinion (30/4)

206	Shabbana	OF COURSE ALIENS EXIST

Table 20. Elaborated opinion on (7/9)

188	Shabbana	Men and women all have equal rights to anything done in a family house - hold. People say that a father is the head of the house but to me I think that the person who wrote that is not clever. This is because I feel that anyones mum and dad is the head of the house. I feel that mums and dads and children shoulld all become a team and do all the house work together. Not just the mum doing all the work.

A similar development can be seen in Shabbana's contributions on 30th April and 9th July (Table 19 and Table 20). In the earlier session Shabbana expresses an opinion but gives no further elaboration, when asked 'why?' she replies that she doesn't know. Her contribution on 9th July on the other hand is well elaborated; she explains the context of her opinion and shows willingness to argue even if the reasons why she holds this particular position are not fully articulated.

Zobeen found it difficult to justify her opinions in the first week of the programme as Table 21 demonstrates. As can be seen from the turn numbers in the left hand column this thread of the conversation was distributed over a much longer section of dialogue in which a lot of distracting off-topic talk was also taking place.

Table 21. Zobeens reasoned opinions (30/4).

188	Sahmeena	ZObeen - Well if you think aliens do'nt exist YOU tell me why?
190	Zobeen	Its hard to explain Sahmeena
192	Sahmeena	Zobeen try to explain
205	Sahmeena	Zobeen I'm asking for an explation- Why do'nt you belevie in aliens
214	Zobeen	The evidence is made up Sahmeena
216	Farhat	HOW DO YOU KNOW THE EVIDENCE IS NOT FAKE?
220	Zobeen	Because Farhat I KNOW!
225	Zobeen	They are fake Sam
230	Zobeen	Aliens aren't true
233	Zobeen	They aren't true
235	Zobeen	You belive in SPACESHIPS sahmeena
236	Zobeen	I ts FAKE

Sahmeena and Farhat are quite persistent in trying to get Zobeen to support her opinion. Eventually she states that the evidence for aliens is faked but finds it difficult to substantiate this view and she includes circular arguments – simple repetition of her already stated position. This is contrasted with her turns in the last session where although the number of her turns is fewer the turns she produces provide comparative statements to support her argument concerning inequality (see Table 22).

Table 22. Zobeens reasoned opinions (9/7).

8	Zobeen	The father of the house earns money along with the mother. The mothers in some familys work and do housework!
95	Zobeen	Women stay at home for their children but some fathers, its always this and that at work!
170	Zobeen	Mostapha if you think it is alright for both the mother and father to work in the house, then shouldn't you spare a thought on how the mother isn't told but she still gives her full attention to the child?
192	Zobeen	It is also quite unfair on the women that in some cases, have the responsibility of ALL the housework! That is TIGHT!

5.3.5 Changes in Attitude - Becoming More Constructive and Less Destructive

Before the programme the tutor rated Drake as unmotivated and childish in class. Afterwards the tutor remarked on the apparent increase in maturity. In the early weeks Drake's behaviour in the discussions rarely advanced the debate and could be destructive, even offensive. In the later sessions, however, Drake's behaviour was generally much more constructive.

Table 23. Consecutive disruptive/offensive turns on 30/4.

75	Drake	Liam has only got a Barbie Doll
76	Drake	With a hole
80	Drake	I'll do to you what they did to JFK JABIR

Table 24. Socially constructive turn on 2/7.

25	Drake	Sahmeena talk to everybody else not just Faz!

Table 25. disruptive/offensive turns 30/4.

41	Sahmeena	Puala I'll talk to you, you loner
42	Zobeen	Paula I guess you want someone to talk to!
49	Paula	I'm not a loner infact everyone is talking to me
57	Paula	If enybody talks to Sahmeena I'm going to beat them up really badly

Table 18 also shows that in later sessions when Drake made joky contributions e.g. "Men and women should be treated equally because it takes them both to make a waaaaaaaa!" they were within the framework of the debate and contributed to the discussion. However, it was not just the boys who could be aggressive in early sessions, 'the girls' produced some disruptive behaviour too, as table 25 illustrates.

5.3.6 Inclusiveness of Discussion

One of the striking features of the online debates in the first week was the way children divided themselves into two different Chat rooms. One group tended to consist of boys with the Black and White girls whilst the other group tended to contain girls, mainly Asian. The girls, especially Farhat, Sahmeena, Zobeen and Shabbana (these four children share a family relationship) seemed quite possessive of their 'space'.

Table 26. Examples of 'exclusive' communication from 18/6.

119	Shabbana	FARHAT 2 SISTERS ARE TALKING DON'T BUT IN
120	Zobeen	Well you talk to us
121	Farhat	IT IS OKAY THAT MY STYLE
122	Sahmeena	FARHAT WAKE UP CALL WERE TALKING ABOUT ALIENS NOT JUST SAYING 'HI'
123	Paula	What do you want to talk about shel
124	Shelley	anything
125	Zobeen	Nusrat who are you talking to
126	Shabbana	PAULA SHUT UP

Table 27. Frustration at non-inclusive talk from 9/7.

21	Farhat	I agree sahmeena
22	Shabbana	thank you Faz
23	Mustafa	yougetone
24	Farhat	anytime
25	Drake	Sahmeena talk to everybody else not just Faz!
26	Liam	yes
27	Mustafa	yes
28	Zobeen	yes
29	Mustafa	yes

For example, in Tables 26 and 27, they talk mainly to each other and can appear to exclude others. Table 27 shows that this could at times frustrate some of the children. Nevertheless, in the later sessions, there are also far more examples of 'inclusive' talk, where children respond to each other, either commenting on opinions or asking each other's views, see Table 28.

Table 27. More inclusive talk from 9/7.

57	Aliza	Mostafa do you think that men and women should do things equal
58	Mustafa	you can say that again
66	Aliza	tosia I agree
67	Mustafa	I don't. Women should be at home for the men
92	Tosia	I partly agree with Shelley…

5.3.7 Affirming and Encouraging Others

As the discussion programme progressed the children appeared to have greater respect for other people and their opinions. In the earlier sessions the children tended to berate each other or ignore each other's contributions if they did not agree with them (see for example Paula Table 12 "Sahmeena you must be mental"). In the later sessions, as the primary mode of discussion was debate and not banter, disagreement seemed to occur less often, but when it did happen was more likely to be expressed explicitly and with a considered challenge to the other person's statement.

On 9th July Mustafa remarked, "Women should be at home for the men". As Table 29 shows, this provoked considerable disagreement. However, there are no unreasoned insults such as those that appeared in earlier sessions. Instead the children produce a variety of arguments - mainly functional arguments as classified by Kuhn et al., op cit. (see also Walker and Pilkington, 2001).

Table 29: Disagreement 9/7.

78	Tosia	Mustafa is living in the past. Things have changed Mustafa. Wake Up!!!
88	Liam	womenand men should be equal and should not be (at home waiting for the man) as Mustafa said
101	David	Mustafa do you intend to have a job and a wife when you're older or are you going to carry on being sexist?
128	David	Mustafa do you live in the kind of family you are advertiving "Where the women cleans the house and the man goes out to work".

Table 30. Social/organisational intervention with negative feedback (30/4).

112	Farhat	BABY ZOBEEN
113	Shabbana	I HATE YOU TO ZOBEEN
114	Farhat	BABY ZOBEEN
115	Zobeen	Thanks Farhat!
116	Farhat	BIG BABY SHABBANA
117	Zobeen	Thats good Farhat!
118	Paula	Shut up shabbana and zobeen you are giving me a headache

As the debate became more focused and on-topic the need to give others negative feedback and/or the need for explicit attempts to manage the contributions of others decreased. In Table 30 Paula intervenes to stop the others from continuing to banter. In contrast by the last session (Table 31) there were several examples of positive feedback and explicit validation.

Table 31. Positive feedback (9/7).

19	Farhat	thats true shabbana
22	Shabbana	thank you Faz
189	Sahmeena	good point shabanna

5.4 Summary of Results

Children's turns in the Chat were found to increase in length and complexity during the study programme. However, although the number of words increased over time, there was a trend towards fewer longer turns. As students' turns became more complex they became longer and tended to consist of more than one move per turn.

There was a marked decrease in the amount of disruptive and off-task behaviour between early and late sessions. Group 1 in session 1 showed a particularly high instance of trading insults as a form of social interaction. This behaviour had declined to near zero by the last session. This was accompanied by a large increase in on-topic talk.

The large fall in off-topic and disruptive challenges appeared to be counteracted incompletely by an increase in on-topic challenging. In the first session the combined total of off-topic disruptive or social challenges was twice that of on-topic challenges whilst in the last session all the challenges were on-topic. This suggests a shift from disputive talk towards more exploratory forms of argument indicative of Burnett's "substantive conflict". This is further supported by an increase in the number of reasons and justifications offered from the first to the last session. Many more agreements and disagreements were supported with reasons than was the case previously.

The exchange analysis showed a relatively high rate of initiating compared with responding and reinitiating in the first session. Turns did not tend to involve the challenges and clarifications typical of reinitiating. Overall this pattern suggested early dialogue was characterised by individuals stating their opinions rather than responding to those of others, creating a dialogue that was only loosely coherent. The dialogue in the last session showed a better balance between initiating and responding turns with higher levels of reinitiating. In addition it seems that the discussion became "safer" and more "affirming" for children to take part in as the amount of disruptive behaviour and negative feedback decreased whilst positive feedback increased.

5.5 Discussion of Results

This chapter focused on a project aimed at facilitating a learning culture in which children could develop argumentation skills. The study addressed the question of whether synchronous text-based Chat could motivate children to extend and develop their written debating skills. For this, children needed to learn to focus on the discussion topic, to discriminate between what was relevant and what was not, to engage with each other's comments, listen to each other's points of view and respond to them appropriately.

Much of the benefit of the programme so far seems to lie with children having learnt through practice in discussing topics of their own choosing, not only what makes a good topic for debate but also basic collaborative skills that are pre-requisite to improving the quality of argument. Thus, children learnt to:

- Focus on the discussion question and not disrupt the debate with off-task banter of an offensive nature;
- Advance statements that represented their own position but also to respond to those advanced by others;
- Encourage the participation of all members of the group and not talk exclusively to those in their friendship group;
- Provide explicit validation and encouragement when they agreed with points made.

In addition to these changes, which might be thought of as basic collaborative pre-requisites for argumentation rather than argumentation skills in their own right, the analysis suggested that children also improved their argumentation skills by:

- Reducing the number of times they simply repeated their conclusion;
- Reducing the number of times they resorted to personal attacks on others when they disagreed with a point of view;
- Producing fewer longer and more thoughtful turns that more clearly linked their opinions to supporting statements;
- Challenging unsupported statements and providing justifications for their own unsupported statements when challenged;
- Discriminating between relevant and irrelevant statements, challenging irrelevant or repetitious statements;
- Explicitly agreeing as well as disagreeing with statements;
- Providing examples that supported alternative viewpoints.

5.5.1 Limitations of the Study

The extent to which conclusions from this study can be generalised is limited. The study is a small one carried out with a single group of students. Moreover, because of the voluntary nature of children's attendance at CHALCS, the children did not all attend classes regularly. This means that the performances of some children did not change to the same extent as those of the children who attended more regularly. Thus, although the online *behaviour* of regular attendees changed as the study progressed, irregular attendees tended to exhibit the same behaviour patterns in later sessions as they had done in earlier ones. This was potentially disruptive to the group as a whole.

The computer-based Chat programme was an addition to an existing course and was intended to provide an opportunity for children to develop the skills of argument rather than teach any particular subject – "learning to argue" as opposed to "arguing to learn". One consequence was that the tutor did not attempt to correct factual errors in children's contributions. In another setting, with more focus on content, the teacher could have spent more time collecting web sites (or other resources) for children to study before the discussion, ensuring a more knowledge-rich debate. The teacher might also have given feedback to the children on their bulletin board contributions or taken examples from the children's writing for the teaching of language points. The roles the tutor might take, as a facilitating participant or as a manager of learning tasks and online environment, have by no means been fully explored. Preliminary work with the same tutor in face-to face discussion suggests that in keeping with the findings of Sullivan and Pratt (1996), the percentage of the dialogue accounted for by students as opposed to the tutor is far greater in the electronic Chat than in the face-to-face classroom and this is likely to be an important factor (if not the most important factor) in the success of the programme. As Veerman (this volume) also suggests, the role of the tutor requires further investigation. Initial impressions suggest that it is particularly difficult for the tutor to steer discussion in synchronous Chat environments because everyone is able to participate at once. However, with scaffolding, participants may learn to take greater individual responsibility for focusing the debate. The principal role for the tutor may be to facilitate this process.

The WebCT environment was originally created for college students and the designers had not considered that younger teenagers might abuse the facility that exists to send private messages. WebCT does not even record the fact that a private message has been sent, and this makes it difficult for the teacher to control or prevent the sending of abusive or inappropriate messages. This point has been put to the WebCT designers but it seems there are no plans to address this in the immediate future. The content of the first session, when the children had not all realised that the discussions were logged (although they had been informed of this), showed that some group members will send offensive messages to each other if they think that they can get away with it. For this reason the tutor prohibited the sending of private messages and enforced this by occasionally patrolling the classroom. However, the fact that the sending of private messages was possible (and did happen, especially in the early stages) means that some of the Chat logs may not be complete and this is unfortunate.

5.6 Conclusions and Future Work

Within the context of an out of school programme for disadvantaged pupils a study was carried out using CMC Chat with 10-15 year-old children as part of a wider programme to improve literacy. The aim was to try to motivate children to develop their written argumentation skills through this medium. This pilot programme seemed to be successful in that over time children:

- Increased the fluency and complexity of their writing;
- Became more focussed on-topic, addressing the discussion question more closely;
- Became more responsive to each other's contributions;
- Became more adept at making, backing and challenging arguments;
- Created a more inclusive and 'safer' learning culture in which children were less likely to be berated and more likely to be validated and encouraged to participate.

Although these results are highly encouraging and, if sustained, are likely to impact on children's critical thinking abilities, it has not yet been demonstrated that these effects can be transferred to face-to-face discussions or course-work in other subject lessons nor that they will impact upon children's extended writing outside the online Chat situation. Data related to these points is in the process of being analysed.

Extended writing tends to be discouraged by other participants in synchronous Chat since it takes too much time to read and digest. Therefore the continuing DaRE programme is aimed at achieving the transfer of these newly acquired skills to extended writing contexts through bridging tasks and tools (including collaborative report writing using a word processor and document sharing through applications such as NetMeeting). This will not only enable longer pieces of writing to be constructed but will also enable children to learn to structure arguments and to learn and check grammar and spelling.

In this study the participation of the tutor was minimal and interventions tended to concentrate on curbing the worse excesses of disruptive behaviour. It may be that this hands-off approach is ideal to encourage students to "learn by doing". Alternatively students may benefit from the modelling of appropriate roles by the tutor or peers. Appropriate roles for the tutor to take within the debate need further research. In particular, the positive effect that the tutor's behaviour might have upon the debate is the subject of further investigation. Ways of providing scaffolding, by which the tutor models desired behaviour and gradually fades from the process, are being tried and investigated (Kuminek and Pilkington, 2001).

6. Notes

1. For example, ‘x because y’, ‘why x?’, ‘because y’.
2. For example, ‘have you stopped beating your wife?’ which contains the premise that you were beating your wife; whether you answer ‘yes’ or ‘no’, both answers suggest acceptance of this premise – no suggests you are still beating your wife whilst yes suggests that you were but have now stopped.
3. Here ‘one’ means ‘an alien’.

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World Wide Web

CHALCS http://www.chalcs.org.uk
TeenChat http://www.teenchat.com
WebCT http://www.webct.com/

8. APPENDIX

Example 1. from Group 1, 30th April, Aliens

Turn	Student	Contribution	Exchange Role	Move	Task
104.	Drake	Elodie your more like SKUNK ANANSI	I	inform	Off- disrup
105.	Dexter	I'don't believe in aliens	R	inform	on
106.	Elodie	were's my	I	?	?
107.	Jabir	Ufo are fun	I	inform	on
108.	Elodie	you look like and smell like scunk anasi	I	inform	Off -disrup
109.	Elodie	reply drake	I	instruct	social
110.	Tosia	you know this!	R	meta	social
111.	Drake	ELODIE IS THE NEW G. GLITTER	I	inform	Off-disrup

Example 2. from Group 2, 30th April, Aliens

Turn	Student	Contribution	Exchange Role	Move	Task
181.	Paula	Adam is the nutty professor	I	inform	off
182.	Farhat	OOH YEH!!!	R	inform	off
183.	Shabbana	FARHAT THE BABY	I	inform	disrup
184.	Zobeen	Yeah Shabs!	R	agree	disrup
185.	Farhat	WELL DONE 100%	R	agree	disrup
186.	Sahmeena	ZObeen - Well if you think aliens do'nt exist YOU tell me why?	I	challenge	on
187.	Nusrat	ALIENS AND BABIES DON'T MIX!	I	inform	disrup

Example 3, from 9th July, Family Roles

Turn	Student	Contribution	Exchange Role	Move	Task
	Liam	hello	R	Open	social
10	Shelley	Hi what do you think.	I	Open Inquire	Social on
11	Drake	man and woman is both equal!	R	inform	on
12	Sahmeena	The question that has to be answered is 'who should look after the family'? What do you think faz?	I	Meta Reason Inquire nominate	On social
13	Liam	the babiesitter	R	inform	on
14	Farhat	both mother and father should look after the family	R	inform	on
15	Shabbana	No Zobeen because our mum works and so does our dad. Also everone does the house work in the house not only mum	RI	Nominate disagree justify justify	on

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