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Effect of Social Relations on the Productivity of Collaborative Group Work

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The study shows how students' discourse that emerges during Collaborative Group Work (CGW) contributes to the ways that students make sense in joint mathematical activity and gain knowledge from social interaction. It is assumed that placing friends into groups can allow the teachers to use their relations for potentially productive collaboration. My focus is how the relation of individuals affects CGW and review the impact of social relationships on the students' discourse during CGW. It is evaluated through the indirect evidence of its effects on students' interactions. I examine type of discourse either disputational, cumulative, or exploratory emerged with the interaction of friend/non-friend group work. An exploratory discourse enables meaning and knowledge to be constructed, and the evaluation is based on the assumption that groups/pairs that bring about exploratory interaction is productive. For this I take three examples from the larger data set: first example is the pair work between two non-friend participants. The second and third examples depict the pair work between friend groups. The result shows that friendship relationships have an influence on the students' collaborative work within groups and may be an important factor to enhance students' cognitive development during CGW.

Keywords: Social relations, friend/non-friends group work, collaborative group work

There are many factors that can influence the benefits of collaborative group work (CGW). One important can be the composition of groups. Groups are composed either by the teacher on the basis of gender mix, ability, friends, non-friends, or students should be included in decision making, about criteria to use when composing the group work. Many writers (for example: Zajac and Hartup (1997); Hanham & McCormick (2009); Edward (2006) and Kington (2005)) advocate the importance of social relation during CGW that can influence on the student-student interaction in collaborative group work (CGW). Hanham and McCormick (2009), report Newcomb and Bagwell's (1995) 'meta analysis on children friendship relation' suggests that friends are more collaborative, communicative and on task during their group work than non-friend groups. Hanham and McCormick (2009), also cite researchers (for example, Berndt, Perry & Miller, (1988); Kutnick & Kington (2005); Zajac & Hartup (1997)) who specifically examined friendship and non-friendship groups and reported the positive impact of friendship group on the students' learning but very little research has been done to study type of discourse emerges when friend/non-friend groups work during joint activities. Therefore, the purpose of this paper is; to analyse the type of discourse of group participants emerges between them and to show that how the social relations affect their discourse which can influence the productivity of CGW. Productivity here is in the sense of generating interactions which increases students' engagement with mathematical ideas and relation. For this I am taking three examples: first example is the pair work between two non friend participants. The second and third example depicts the pair work between friend groups. In both examples one participant is taken from the first example who is working with her friend. The analysis shows that how the friends' relation plays an important role in their ZPD for mathematics learning. Findings suggest that friendship behaviour provided learning environment in which they scaffolded comfortably each other, use equal status language in order to

understand each other which foster a learning environment for them.

Literature Review

Zajac & Hartup (1997) after the review of 13 observational and experimental studies conducted between 1940 and 1986, suggest that collaboration between friends supports cognitive performance. They report this after comparing the behaviour of friends and non-friends on a variety of tasks including; (i) problem solving, (ii) writing creativity and (iii) discussion on normative (social) issues. Friends interact more efficiently and productively than non friends. Zajac & Hartup establish the following reasons why friends perform better than non friends:

a. Friends know the similarities and differences of each other better than non friends so they are less troubled and set an interactional context that has implications for cognitive development that may take place during schooling.
b. Friends feel more secure in communicating with each other as compared to non friends. They are active and talk openly thus experiencing a very pleasant climate that might be effective for task exploration and problem solving.
c. Friends have a strong commitment to one another and to reciprocity in relation with one another.
d. Friends manage criticism and disagreement effectively. Consequently, they have less hesitation to disagree with friends than non-friends which may be necessary for cognitive development. They justify and require justification in a more easy way.
e. The quality of the friendship relationship can provide an appropriate environment for cognitive enhancement (Hartup, 1996). Friends display greater positive affect (e.g., smiling and laughing), engage in a higher frequency of physical contact and display higher play sophistication through increased on-task behaviour, talking, and self-disclosure. Students' friendship behaviours differ from one another, dependent on how close, supportive, intimate, and constructive they are. However, strong friendship alone is not sufficient to ensure successful collaboration and communication between friends. The quality of the collaboration is also important.

Kutnick and Kington(2005) found a positive relationship between friend groups and cognitive development in classrooms after comparing the performance of friend and non-friend groups. They argue that friendship enhances the performance of the students on cognitive tasks during collaboration. They observed (i) greater amounts of 'talk', (ii) a range of problem-solving skills, (iii) higher performance in creative writing and (iv) higher levels of transitive communication on curriculum based creative tasks among friends.

Azmitia and Montgomery (1993) compared the discourse of 5th grade friends with the non-friends (acquaintance). They found that the collaboration between friends promotes greater development of scientific reasoning than between non-friends. They also observed that friends were more engaged in transitive dialogue, and obtained higher score on difficult problems during both collaboration and post-test sessions than non-friends. The behaviour of friends during group work was more analytical than non friends as they check and evaluate the solutions proposed by each other and justify them.

By keeping all these advantages of social relation during CGW I wish to examine what type of discourse emerge between friends/non-friends during CGW and how it contributes to the ways that they make sense in joint mathematical activity and gain knowledge from social interaction. It is assumed that placing friends into groups can allow the teacher to use their relations for potentially productive collaboration. My focus is how the relation of individuals affects CGW and review the impact of social relationships on the students' discourse during CGW.Itis evaluated through the indirect evidence of its effects on students' interactions. I examine the friends and non-friends discourse. My analysis here builds on three episodes.In first episode two non friends (Rida and Nomail) worked together. In secondand third episodes two friends, Dania and Nomial, and Rida and Kinza worked together respectively. In each of the second and third episode one of the participants came from the first episode. In this study, close friends are considered friend groups (or friendship groups) and the not close friends are considered an acquaintance groups (or non-friend groups).

The Socio-Culturalist Theoretical Background

This study is based on sociocultural but is pedagogically inspired, in that CGW is provided as a social context for students to share their experiences with other students and I focus on the understanding of the process of learning with groups of individuals in a specific social context. Learning is seen as a dialogic process between students and other students and the teacher, "working within settings that reflect the values and social practices of schools as cultural institutions" (Mercer & Littleton, 2007, p. 4).I take learning as participation during joint activities. Students participate in joint activities and construct their new knowledge through negotiation within communicating groups and individuals internalize the effects of working together on the same problem during CGW. I do not look at discourse in a static way, but see discourse as dynamic and shifting from one mode to another within one activity when students are involved to complete the task. This is linked with Vygotsky's idea of the 'zone of proximal development' and the idea of 'scaffolding' (Edwards, 2009) that gives insight to understand the ways how students learn by the assistance of each other, and language is used as means for interthinking rather than assisting them. The metaphor implies a temporary help that is shared by the students during CGW to complete the task. In my account, the support of language is how scaffolding works.

Analytical Framework

It is considered the extent to which students were interacting either in disputational mode, cumulative mode or exploratory mode (Mercer, 1996).

Disputational Discourse: This discourse is characterised by an unwillingness to take the other's point of view and the consistent reassertions of one's own. It makes joint activity into a competition rather than a collaborative endeavour. Information is flaunted rather than shared. Students work individually on the task within the group, they disagree with each other and take individualistic decision. Differences of opinion are opposed rather than resolved, and the general orientation is defensive. Participants work to keep their identities separate, and protect their individuality.

Cumulative Discourse: In this type of discourse students take part in the discussion and elaborate (add information) or confirm the ideas. They share their knowledge and understanding in a supportive and uncritical way. However new ideas are not developed, just accumulated. Students assist one another during group work but there is no reasoning from the help giver or arguing from the help seeker.

Exploratory Discourse: Exploratory discourse refers to discourse in which partners engage critically and constructively with each other. In joint activity, students explain the ideas to their partners with reasoning. When students are faced with cognitive conflicts, they are resolved in a rational way. Relevant information is suggested for joint consideration. Students are not only involved in planning or proposing the strategy for doing mathematics but also give the reasons for choosing this. Proposals may be challenged and counter-challenged but, if so, reasons are given and alternative hypotheses are offered and justified; students are engaged.

An exploratory mode of interaction enables meaning and knowledge to be constructed, and the evaluation is based on the assumption that groups/pairs that brings about exploratory interaction, that is where students are exchanging propositions, explaining and justifying ideas to each other, is productive.

Methodology

For this research, I am utilising the case study method in which the focus does not lie on individuals, but on the social and cultural phenomenon of student-student interaction that the individuals perform during collaborative group work (CGW). It is essential for a case study to identify the main unit of analysis and the kind of case(s) (Cresswell, 2007). In this study, classroom, as a case, has been studied and investigated in relation to its student-student interaction during CGW. Thus, the unit of analysis is group activity and not an individual student. Evidence was collected in two schools (the Light Campus and the New school) over one teaching term in the academic year in a usual classroom context in the form of observations, audio and video recordings, interviews, questionnaire and field notes. Classes were videotaped with one camera. The camera focused on a group of students for the duration of a whole period and the remaining groups were audio recorded. The data was collected in classroom conditions that were as normal as possible.

The excerpts that we discuss come from the larger dataset of videotapes; total 52 episodes were video recorded from two classrooms. I have chosen to focus on these two classrooms because in one classroom there was a focus group and in the other classroom, different types of groups were formed: same and mix gender, friends, non-friends and the mix of friends and non-friends. I asked the students during the interview, 'who is/are your friend(s) in this class'? According to their responses a friendship matrix was constructed, which helped the researcher to identify friendship pairings/groups. However, more often opportunity is provided the students to choose their group mate(s) according to their wish. The teacher also selected some friendship groups based either on her/his judgments or the group's assessment. I interviewed almost all those students whose group work was video recorded. A few acquaintance pairings were determined in the consultation with the class teacher, ensuring that although they were not friends, they were of the same gender and ability. My analysis, described in detail below, was grounded in transcripts of talk and gesture, and videotapes of classroom interaction.

Discourse Analysis

This section compares the episodes of non-friend participants with friend participants, to show for each type the discourse pattern that typically emerges from the students' interactions during CGW. Segments of transcripts are used to exemplify and compare the behaviour of friends (Dania and Nomail) and non-friends (Rida and Nomail) participants.

Example 1: The discourse between non-friend participants

The following segment, a transcript taken from the Light campus episode E-1, illustrates the discourse between a non-friend pair: Nomail and Rida.

No.	Participant	Discourse
1.3	Rida	In this activity, we make the numbers
1.4	Nomail	No, I will make the numbers *(Nomail takes her copy from the bag and starts to work separately. Rida is looking at her)*
1.5	Rida	Are you doing your own?
1.6	Nomail	Yes I am
1.7	Rida	*(Working separately while sitting in the group), 5127*
1.8	Nomail	*You have no need to tell me.* *(But she writes something on her copy)*
1.9	Rida	You should write Units, Tens, Hundreds, Thousands *(Nomail looks at her but she did not respond)*
1.10	Nomail	I know better than you. I can solve it myself
1.11	Rida	Hum
1.12	Nomail	Why are you talking too much? *(she is asking a nearby group member but they do not care for what she is saying)*

		Keep silent we are working.
1.13	Rida	*(Putting a finger on her lips indicating to keep silent)*
1.14	Nomail	Ok, do your own work
1.15	Rida	Come here
1.16	Nomail	*(One student moves from this group)* Ooh, you came here to copy our numbers. Cheater, cheater … Close your eyes and do your work

Sequence 1:The Discourse between Rida and Nomail (Non-Friends Pair)

Rida introduced the task and offered her collaboration: 'we make the numbers' (turn 1.3). Rida wanted to work collaboratively with her but Nomail refused to work with Rida and she preferred to work individually at the beginning of the episode (turn 1.4). Rida could not believe this, so she asked for confirmation: 'Are you doing your own?' She responded, 'yes'. In spite of this, Rida tried again for collaborative work with her when she suggested, 'please write Units, Tens, Hundreds, Thousands' (turn, 1.9) but Nomail did not pay any attention to her words. Moreover, Nomail responded to her in a rude way, 'I know better than you. I can solve it myself'. Nomail tried to disturb the other group members (turn 1.8) when they were busy in their group work. As one student passed near Nomail, she assumed that this student came there for cheating from her work. She bluntly blamed her and was calling her 'a cheater' continuously (turn 1.16) and then commented in a rough and impolite way, 'close your eyes and do your work'. After that, the students did not attempt to pursue the task collaboratively. The exchange between Rida and Nomail was disputational and their academic interaction was very limited. Nomail and Rida were not friends with each other so one possibility is that Nomail's behaviour was because of their non-friendly relationship. We can see her behaviour in other episodes with friend and non-friend participants.

Example 2: The Discourse between Friend Participants

The following transcript of discourse between Dania and Nomail, in the Sequence 2 which is taken from Light campus episode E-5, illustrates how friendship affects the behaviour of students during CGW. The reason to choose this segment is to differentiate the behaviours of Nomail with friend participant and compared to that with a non-friend participant. In this sequence, the two friends were involved in an activity to put beads onto three abacuses in such a way that their sum should be 1000

. **No**	**Participant**	**Discourse**
5.20	Dania	We will write three number so that by adding their total should be 1000
5.21	Nomail	Please tell me again
5.22	Dania	We will write three numbers , their sum should be 1000
5.23	Nomail	But teacher was saying we cannot use more than 10 beads for three abacuses
5.24	Dania	Yes, you are right but only for one abacus If we put two on the Units pole, three on Tens and the remaining five on the Hundreds pole

5.25	Nomail	… then the number will be 532
5.26	Dania	Yeah
5.26	Nomail	I understand…. can we leave the Units and Tens poles empty?
5.27	Dania	Not sure but we can ask the teacher
5.28	Nomail	Listen to me and we'll do it We add to the first abacus two Hundreds and to second abacus five Hundreds and to the third abacus three Hundreds
5.29	Dania	I will write it: 200, 500 and 300 *(she writes in vertical form and adds)* Yes, it's sum is 1000
5.30	Nomail	But the other two abacuses are empty
5.31	Dania	Can we use more than ten beads for one abacus
5.32	Teacher	Please can you read the instructions on your worksheet?
5.33	Nomail	*(Both look towards the worksheet)* No teacher has not written that
5.34	Teacher	It means you can do it
5.35	Nomail	It is easy now
5.36	Dania	I will tell you the first number
5.37	Nomail	Ok, then I will tell the second
5.38	Dania	245
5.39	Nomail	654
5.40	Dania	And third
5.41	Nomail	….. third, third we add these two numbers
5.42	Dania	She writes vertically and adds it 899
5.43	Nomail	… remaining
5.44	Dania	We subtract it

5.45	Nomail	Yeah (Nomail writes 1000 and 899 vertically and subtracts)
5.46	Dania	101 yes

Sequence 2: The discourse between Dania and Nomail (friend pair)

In the above segment, it appears that the interaction between the friends (Nomail and Dania) was collaborative from the very beginning of the episode. Nomail did not hesitate when asking Dania again, when she could not at first understand the task (turn 5.2) and cleared up her doubts (turn 5.4). Such responsive behaviour indicates how Nomail was careful about her work with Dania. She did not continue her work when she could not understand the task and the instructions which were given by the teacher at the beginning of the group work. Dania explained the uses of the abacus for problem solving by arbitrary numbers. Nomail got it and made the number by using these digits according to their place values. Nomail was much more confident working with Dania, for example when Dania asked to consult the teacher (turn 5.9), she not only preferred to accept the challenge instead of taking help from the teacher but also proposed a strategy to solve it (turn 5.10).

It was also observed that friend participants (Nomail and Dania) were feeling more secure than non-friends (Sequence1) and they experienced a positive affective climate, which proved favourable for task exploration and problem solving. Furthermore, they seem more motivated to solve the problems as compared to non-friend participants (Zajac & Hartup, 1997). Nomail's behaviour was entirely different with non-friends compared to friends. In Sequence2 Nomail was more engaged with the task and appeared more comfortable with Dania as compared to Rida and similarly with other non-friend participants of different groups during the intervention. Nomail was involved working collaboratively throughout this whole episode (E-5). She was confident working with Dania and listened to her attentively as compared to Rida, where at one stage she refused to collaborate with her even though Rida tried twice for collaborative work – she still did not participate. In contrast, in Sequence 2, Nomail affirms her participation with Dania and they exchange questions and answers with each other. Furthermore, Nomail answered loudly to Dania, which shows that she was feeling more relaxed and secure when working with Dania. She was involved in all the decisions that were made during CGW. She showed readiness to work together. The discourse between Dania and Nomail was of high quality and cumulative. Friend participants were better collaborators on a wide range of tasks. Friends appeared to support better cognitive performances than non-friends (Zajac & Hartup, 1997).

Example 3: the discourse between friends 'Kinza and Rida'

The following transcript of discourse between Kinza and Rida, which is taken from Light campus episode E-11, also illustrates how friend's behaviour changed the discourse pattern. The reason to choose this segment is to present another example of two friends this time involving the other participant in the non friend episode shown in the Sequence1. In this sequence, two friends were involved in an activity 'Find a number' in which they will find the solution of after putting a number for different shapes. An example is given to get them started.

No.	**Speaker**	**Discourse**
.1.	Rida	*(They solve the example again)* They seem me interesting questions.
.2.	Kinza	*(Reading)* 'Can you find another solution?'
.3.	Rida	Can we write 5?
.4.	Kinza	There should be same number in each square box. 

.5.	Rida	Yeah , In the similar shapes, numbers should be similar
.6.	Kinza	We write 0 in circle and 5 in square box
.7.	Rida	OK *(They writes 0 in circle box and 5 in the square box)* It's sum is 50.
.8.	Kinza	Next question ; 'Find the value for each these shapes' *(translate it in Urdu language)*
.9.	Rida	What the number would be there?
.10.	Kinza	… Put 3 in the circle and 4 in square box
.11.	Rida	*(She writes 3 in circles and 4 in squares)*
.12.	Kinza	*Add them*
.13.	Rida	4 3 4 3 <u>4 3 4 3</u> 8 6 8 6 Hum… It's not right?
.14.	Kinza	Why it is not right?
.15.	Rida	Because after adding 3 and 3 is 6 And we are writing 4 in the square box, They are different numbers in the square box.
.16.	Kinza	Putting finger on square it should be 6, not 4 *(They are writing 6 and 6 in the square box)*
.17.	Rida	*(Adding)* 6 3 6 3 <u>6 3 6 3</u> 12 7 2 6 It is wrong again because now square box here (on third place) is 7.
.18.	Kinza	Wrong… carry …This mistake is because of 'carry'
.19.	Kinza	Wait, putting finger on the first question Then it is also wrong.

20. Rida How?

21. Kinza We did not take the carry it should be 60 here *(putting finger on her previously solved answer)* instead of 50.

Sequence1: The discourse between Rida and Kinza (friends pair)

In the start of the episode shown in the Sequence 3, Rida and Kinza learnt by the solved example how to solve the next parts. This example motivates them (turn 11.1). Kinza feels a bit more confidence while working with Rida. Both participants were looking more secure, responsible and happy. It is Kiza's first time when she not only initiated for collaboration by reading the statement of problem but also found an important point and emphasised 'the number should be same for the same shape' (turn 11.4). Both students suggested their ideas, for example, Kinza suggested '0' for circle and '5' for square (turn 11.6). They added it verbally and agreed on the solution although it was their wrong addition but without noticing the mistake, they moved to next problem.

Rida put a question what number should be there (turn 11.9); after thinking Kinza suggested '3 in the circle and 4 in the square' (turn 11.10) but after adding they realized that these numbers are not right (11.13). The discourse moved into exploratory mode when they saw critically why these numbers were not right (11.14) after that, they found reasons for their mistake (turn 11.15). Such critical behaviour helped them not only to find the correct number for the second question but also to find their previous mistake and correct it. They even found two possible solutions for the first part now. They share their ideas together and appeared more critical then when they were working with non-friends, when their discourse was disputational. Over all in this episode, the discourse among the participants was cumulative to exploratory in nature. Students gave full attention and listened carefully to one another while working within groups consequently cumulative discourse emerged by their CGW at the beginning of the task, which later moved to the exploratory type. It evidences that groups performed well when composed of friends.

Discussion

The analysis of Sequences 1, 2 and 3 indicates that social relations were one of the factors that affected the nature of discourse between participants within groups in this study.

Nomail and Rida are not Friends

The discourse analysis of the non-friend pair: Rida and Nomail, shows their non-cooperative behaviour within the group. Both students appeared very rude and non-collaborative when they worked together. Their behaviour was not encouraging and seemed like that they do not want to work together. Moreover, they could not establish any productive strategy or collaboration during CGW.

Analysis of these transcripts shows the students' poor interaction because of non-friendly behaviour leads in this context to disputational discourse. In the beginning of the episode, Rida initiated for collaborative work and wanted to share ideas to understand the task. However, she did not get any positive response from Nomail. As a result, they did not work collaboratively however, at some places, they appeared to be working together but it was individual work. Accordingly, I can say an important factor that can affect the usefulness of CGW might be students' relation in the social context. As could be observed in the example of Nomail and Rida, they were working together but they were not friends. They could not establish a productive collaboration and their discourse was disputational. It seems to me that if the relationship between participants is not good during joint activities, this will foster a non-collaborative context, which could not provide opportunities for leanings. As Azmitia (1988) argues, collaboration can provide the better context for learning as compared to independent learning and this learning is maximized when students work with their friends. In the same way, Webb (1991) argues that students can learn better in friends group groups as compared to non-friends because they get timely and elaborated help from their friends. Scaffolding was expected between Nomail and Rida in pair work but they could not establish a collaborative context where they could help each other. They were off-task, and that not only created problem within the group, it might cause disturbance for other groups

too (see Sequence 1, turn 1.12).

Nomail and Dania are Friends

The discourse analysis of the friend pair: Dania and Nomail, shows very cooperative behaviour within the group. Both students appeared very collaborative when they worked together. They encouraged each other and completed their task with consensus.

Analysis of Sequence 2 shows that friend groups appeared more collaborative than non-friends (Sequence 1). This supports previous research which has suggested how important mutual engagement and transactive communication are for productive collaboration (Newman, Griffin, & Cole, 1989). Analysis (see, Sequence 2) shows that participants did not feel hesitation for collaboration with one another and they both were happy by working together. They both had no shyness for asking questions again and again and such friendly behaviour appeared to help the students to think more deeply and construct their knowledge with understanding. They commonly picked up and elaborated on each other's ideas rather than their own, e.g. They did not move on to the next step until they had completed the first step by mutual understanding. They appeared more confident and asked many argumentative questions to each other. Furthermore,the behaviour of this friend pair shows that their transactive communication was quite oriented to each other. Hartup (1996) argue that such type of behaviour can be more effective for learning because friends know each other's needs and are more eager and able to meet them.

Friends in this context feel more secure and motivated to work on task as compared to non-friends' participants (Sequence 2). For example, at one place, Dania wished to consult with the teacher on a difficult point but Nomail refused to take the help from teacher. It shows how the friendship behaviour boosts the confidence level of the students. They listened to each other suggestions, ideas and opinions very attentively and responded in a very polite way. This type of behaviours was not seen with non-friends participants' episodes involving Nomail. It shows that the communication between friends was enhanced when they worked together within a group. They are likely to anticipate each other's ideas, draw on experiences they have shared or previously discussed and work efficiently (Newman, et al., 1989).

Groups of friends appeared to be better cognitive performers than groups of non-friends. Transcript analysis shows that their approach was supportive and assisting to one another for the sake of reaching a conclusion. In short, they were more collaborative and constructed their knowledge by participation and negotiation. Evidence from the other school where friends Abdul and Larab were working together also showed them working in a very friendly atmosphere, which created many opportunities for learning to them. In addition, their interpersonal relationship facilitated the development of new knowledge and gave a scaffold for cognitive development.

Friends Enjoy their Work

In the New school, when the teacher gave the students free choice to sit in a group triad of their own choice, the students' first choice was to sit with their friends. For example, Abdul and Larab (members of the focus group) were two friends who preferred to work together. In a similar way as in the study of Planas (2011, p. 138) one student responded to the interviewer, "Paola: I like sharing group with my friends…" The children were more motivated to cooperate with their friends than with other children (literature review). It is observed that friendships pairing/groups created conditions that facilitated CGW. However, friendship pairing/groups was not a single factor to improve the communication among students during CGW. The friendship relationship creates a context, that helps participation on a task in a very pleasant atmosphere which facilitates collaboration among students, but other factors also affect this.

Friends' Show Responsibility

Analysis showed that friends demonstrated very responsible behaviour and were feeling comfortable when presenting and evaluating their ideas. This is evidence of accountability within the groups that assisted the students to keep on task and do their work carefully. Friends had strong commitment to one another, which favoured of collaborative learning. Students called each other by different names during CGW, and although it was a possibility that they could become angry from being called names in the group (use of street language) in contrast, they appeared more participative within the

group. Friends ways of informing each other about mistakes seemed inadequate to move the discussion forward as it seemed disputational and out of context, but in fact it assisted the students in focusing on the task within groups. Moreover, friends were observed to be cheerful and enjoying the work and shared the understanding of the situation. As Azmitia and Montgomery (1993) say, friends work better and assist one another in difficult situations better than non-friends.

Conclusion

The results of this study reveal that friendship relationships have an influence on the students' collaborative work within groups. Friend groups appeared more collaborative than non-friend groups. Therefore, friendship might be an important factor to enhance student's cognitive development during CGW because:

- friends' behaviour during CGW was very cooperative and they worked in a very free atmosphere.
- they knew each other's needs and drew on experiences that they had shared or previously discussed and they were more eager and able to meet them. Therefore, they commonly picked up and elaborated each other‟s ideas.
- they had no shyness in asking questions again and again from each other, and mostly they did not move on to the next step of the solution until they completed the first step by mutual understanding.
- friends seemed more comfortable in presenting and evaluating their ideas and predominantly appeared accountable to each other within the group, which assisted the students to keep on task and do their work carefully.
- friends had a strong commitment to one another, which favoured certain kinds of collaborative learning.
- their interpersonal relationship mostly facilitated the students to develop new knowledge and scaffold for cognitive development. Such friendly behaviour helped the students to think more deeply and construct their knowledge with understanding.

In the light of these results, I suggest that classroom teachers should understand the role and working of friendship cultures in their classrooms before drawing upon the potential of friends as learners during CGW. Teachers who aim to use CGW to promote cognitive learning in their classrooms should consider the students' relationships, as the right groupings can improve the quality of classroom discourse.

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