Effects of modelling on group discussion during collaborative writing among Primary 2 students

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Abstract

This study examines the use of modelling as an instructional strategy to promote productive discussions during collaborative writing among Primary 2 students. An instructional video based on an adaptation of the argumentation model of Toulmin (1958) was created. It featured the desired behaviour when engaging in productive discussions during a writing task. The video was used in an intervention as a modelling tool to facilitate a class discussion on the features of productive discussion. Data was collected through video-recordings of a group of students during pre-intervention and post-intervention group writing sessions. Content analysis was carried out on the video transcripts based on the adapted Clue, Idea and Disagreement (C.I.D.) model. Findings showed that students were using the model for their discussion and there were positive effects on the quantity and variety of ideas generated. This study suggests that modelling may be the key to increasing productivity during discussions for elementary students. It also proposes a model of discussions for educators to use to provide scaffolding and structure for the teaching and learning of productive discussions.

Keywords: **oracy, Toulmin, discussions, modelling**

Introduction

Oral interaction is an integral part of learning collaboratively in the classroom. A common classroom practice observed by the writers is groups of a few students trying to complete collaborative tasks related to problem-solving, writing and experiments. Increasingly, this phenomenon has cascaded down to learners as young as seven years old. During these tasks, students are expected to engage in discussions with their peers and, subsequently, produce a respectable piece of work without proper training or instruction of how this should be done. This is particularly challenging when the ideas of a group of students have to be translated into a piece of narrative writing. In many instances, the process is unproductive, students are disengaged and the writing is hardly the result of a collective effort. This study investigates the use of modelling as an instructional strategy to encourage productive discussions among young learners and its possible impact on collaborative writing. The research questions for this study are: What are the effects of modelling on the quality of discussions and what are the effects of modelling on collaborative writing?

Classroom discussions defined

Classroom discussion is broadly defined as the oral interaction that occurs between students and teacher and among students (Cazden, 1986). The concept of "talking to learn" (Britton, 1969) laid the conceptual foundations for current understandings of classroom discussion. Classroom discussion is an event where the dynamic, temporal process of negotiation occurs among members of a group (Garfinkel, 1967; Sacks, Schegloff, & Jefferson, 1974). Speech plays a crucial role in children's development as the requirement to explain, elaborate or defend one's position to others allows a learner to learn to integrate and elaborate knowledge (Vygotsky, 1978).

Current studies centre on analysing classroom discussion practices in different contexts and are preoccupied with locating patterns and analysing effects on their participants (Dickson, 2005). The role of teachers in classroom discussions is often a subject of investigation (Krussel, Springer, & Edwards, 2004). In terms of context, there has been considerable interest about discussions in the Mathematics classroom (Blanke, 2009; Pierson, 2008) and the effects of discussions on reading comprehension (Nystrand, 2006). Studies on classroom discussions in Science often analyse the use of logic in argumentation during discussions (Erduran, Simon, & Osborne, 2004). One particular study analysed student discussions in working groups during laboratory investigations (Richmond & Striley, 1996). However, studies investigating instructional strategies to enable learners to carry out discussions in working groups or classroom interventions that ensure productive discussions are scarce.

Modelling as an instructional strategy

Modelling is an instructional strategy where a new concept, approach to learning, behaviour or thought process is demonstrated by the teacher or other expert students (Duplass, 2006).

Research has shown modelling to be an effective instructional strategy which allows students to observe the thoughts, behaviour and speech of the teacher or other experts in the learning of writing, group work and argumentation skills (Raedts, Rijlaarsdam, van Waes, & Daems, 2007; Rijlaarsdam et al., 2008; Rummel & Spada, 2005; Schworm & Renkl, 2007; van Steendam, Rijlaarsdam, Sercu, & van den Bergh, 2010). This form of instruction encourages students to learn through imitation of particular desired behaviours; from observing others they form an idea of how new behaviours are performed, and on later occasions this information serves as a guide for action (Bandura, 1977; 1986). One such modelling method is student-centred modelling where students model desired behaviours, thought processes and speech for their peers. This occurs when teachers engage expert students who have mastered specific concepts or learning outcomes in the task of modelling for their peers. Such modelling provides a less teacher-centred and more supportive learning environment for students (Duplass, 2006).

For the purpose of this study, modelled discussion is defined to include behaviour (such as the seating arrangement, group roles) and discussions of the students during collaborative writing.

Toulmin's model of argumentation

Toulmin's model of argumentation consists of a layout of arguments that in addition to data and claim distinguishes between warrant, backing, rebuttal and qualifier (Toulmin, 1958). (See Figure 1.) The model has been used to improve discussions in Science classrooms (Erduran et al., 2004; von Aufschneider, Osborne, Erduran & Simon, 2008). A number of researchers are also in favour of teaching it in composition classes (e.g., Bizup, 2009). They believed that Toulmin's model represents one which students can easily use to defend claims and consider probable responses directly and efficiently. Its basics can be taught in a mere twenty minutes in the classroom prior to writing activities (Locker & Keene, 1983).
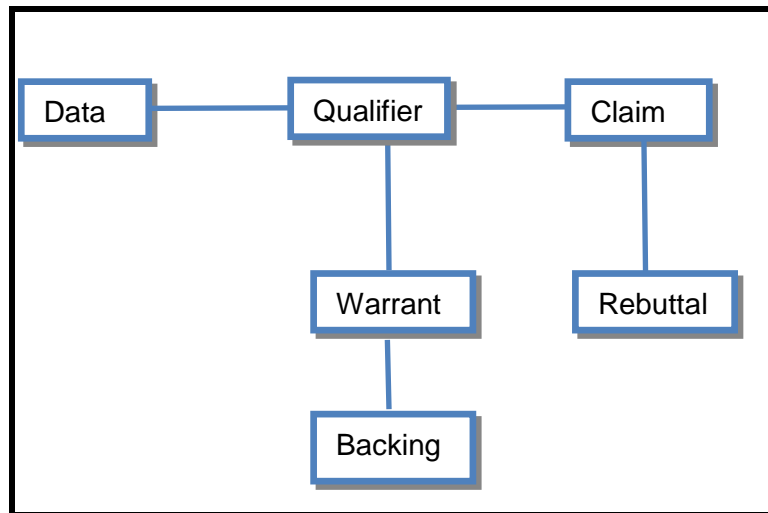
Figure 1. An adapted graphical representation of Toulmin's (1985) model.

In this study, Toulmin's model of argument served as the theoretical underpinning to the design of a structured classroom discussion instructional video as well as the analysis of the resulting discussions. This study aims to examine the effects of modelling on the productivity of classroom discussions during collaborative writing. Toulmin's model was adapted to suit the context of the young learners (eight-year-olds). "Warrant" and "Backing" from the Toulmin's model were not included after discussion with the teacher as it was felt that the eight-year-olds might encounter difficulties understanding what constituted a warrant. The focus of this study was on enabling the students to support the ideas they mooted and to put forth valid arguments. Data, rebuttal and claim were then taught to the learners in a modified acronym C.I.D., Clue (Data), Idea (Claim) and Disagreement (Rebuttal), to enable easy assimilation of the model. The target words to be associated with each of the components were selected to enable easy identification of their usage as well as to provide scaffolding to the young learners during the discussions. (See Figure 2.)
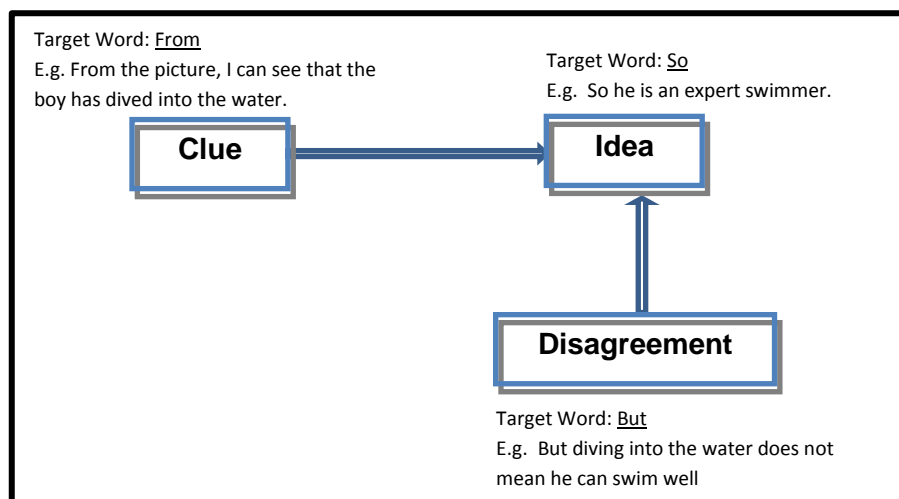

Figure 2. C.I.D. model of discussions.

Methodology

The study was conducted through the qualitative research method. Qualitative research is used

when one seeks to employ a naturalistic approach to understand a phenomenon in a "real-world setting" without any attempts to manipulate the phenomenon of interest (Patton, 2001). The group of students under study was from a class of 30 seven- to eight-year-old Primary 2 students. This class was selected through convenience sampling and the students were in mixed groupings of threes, a typical group size for discussions during collaborative writing, with a high progress student, a middle progress student and a low progress student in each group. These students were categorised in the various progress groupings through observation of their daily writing ability standards.

As the make-up was similar across all groups, one particular group was analysed in detail as representation of the class. The mixed gender group comprised two girls and a boy. The two girls are known as S1 and S2 and the boy is known as S3 for the purpose of the analysis.

An instructional video (to be known as Video from this point forward) featuring students engaged in productive discussions during a writing task was created based on the C.I.D. model of discussions adapted from Toulmin. The three student actors in the Video also modelled the group roles and posture. This Video took four hours to create and its script can be found in Appendix 1.

After the Video was screened, the teacher facilitated a discussion on the features of a productive discussion and the students S1, S2 and S3 identified the C.I.D. structure in an excerpt of the Video discussion. The activity sheet given to them for discussion is found in Appendix 2. Thereafter, they discussed ideas for their group writing while the teacher played the role of a facilitator intervening minimally in the process.

Video-recording of the discussion process was conducted before the students watched the Video and for two separate sessions after they had watched the video.

In this study, data from video-recordings and video transcripts were analysed at a general level as part of the research. The students' behaviour and work were evaluated based on the following areas as modelled in the video:

(i) *Seating Arrangement – Were the students seated in a line or huddling together?*

(ii) *Role Definition – Did the students allocate roles?*

(iii) *Quality of Discussion – Did students make use of the C.I.D. model of discussions by using cue words such as "from", "so" and "but" when putting forth their ideas and disagreements? Were there more ideas written down? Were the ideas more novel and having more variety?*

Data sources

For ease of analysis, the three videos used in the study are named as follows:

(i) *Pre-Video: Video of group before they watched the Video*

(ii) *Post-Video 1: Video of group having their first discussion after they watched the Video*

(iii) *Post-Video 2: Video of group having their second discussion*

The video-recordings were reviewed and a manual transcription was carried out by the researchers and analysed using simple content analysis.

The cue words in the C.I.D. model of discussions were used to determine the extent to which students' behaviour and discussion patterns had been modified with the introduction of the Video.

Results

The analysis of the transcripts and review of the Post-Videos showed that there were visible changes to the students' behaviour after they watched the Video. The three themes examined in the analysis included seating arrangement, role definition and quality of discussion. These themes were possible attributing factors in improving the process of collaborative writing.

(i) Seating Arrangement

Before watching the Video, the group sat in a line during discussion in the Pre-Video. After watching the Video, they huddled together to facilitate discussion in both Post-Video 1 and 2.

(ii) Role Definition

The viewing of Pre-Video revealed that the students did not clearly define roles for each of the group members whereas, in Post-video 1, they decided on the role they were to take up. S2 was the recorder and S1 and S3 used "scissors-paper-stone" as the means to decide on who was to be encourager and timekeeper. In Post-Video 2 though, it was interesting to note that the students forgot to allocate roles to one another. Yet, they took turns to be the recorder in an amicable fashion, unlike in the Pre-video. Negative behaviour also dropped drastically. There were fewer instances of hitting, pushing or snatching.

In Post-Video 2, there were times when S2 showed outward disagreement with S3's suggestions by slapping her forehead or putting her finger up to hush him. In contrast, S1 had stopped all negative behaviour and was instead encouraging towards S3 several times in the discussion.

(iii) Quality of Discussion

Generally, in the Pre-Video, the students gave their ideas without supporting clues and they tended to agree readily to someone else's ideas. Besides agreeing easily to S1's suggestions, S2 also added onto S1's ideas by giving additional information without supporting her ideas in a concrete manner.

In the Post-Video 1 discussion though, S1 was seen trying to incorporate the C.I.D. model of discussion that she had observed in the Video. She consciously used key terms from the model – ideas and disagreements – albeit not too successfully and effectively at first. However, she warmed up and later substantiated her ideas with evidence as seen in the picture as the discussion progressed. She used cue words like "from" and "so" when putting forth her ideas.

S2 and S3 also used more of the cue words in Post-Video 1 compared to the Pre-Video. S3 was also seen to be more engaged and involved in the discussion. There was also an increase in disagreements with the use of the cue word "but". The increase in disagreements led to the discussion of the viability of their ideas. The modelling of group discussion had also presented the notion that it was acceptable and desirable to disagree constructively.

From the Pre-Video to Post-Video 1 and 2, it was observed that the quality of discussion had increased, as shown by an increase in the number and variety of ideas generated. During the Pre-Video, there seemed that two ideas had been given but, effectively, there was really only one similar idea – about the boy drowning, getting saved, being brought to the hospital and eventually recovering. In Post-Video 1, there were seemingly three ideas but, again, there was a similar thread of thinking about the girl being brought or sent to the general office. Also, the "idea" about the boy apologising to the girl and both being good friends thereafter

was like a continuation of their previous idea instead of a new one. In Post Video-2, it was clearly seen that there were four ideas and they were of a different variety: the boy bringing the wallet to the police station and thereafter getting rewarded by the parents, the boy giving the wallet to the security guard and being praised, the boy taking the money from the wallet and giving the empty wallet to the police, the girl looking for the wallet and the boy returning it to her and the girl being grateful.

Discussion of findings

The findings of this study have been promising. In a span of a month or so, there were improvements made by the group under study in terms of their seating arrangements, role definitions and quality of discussion.

In all, from the two post-videos, one can see that modelled videos resulted in changes in the group's behaviour and roles taken during discussion and the C.I.D model of discussions had provided the scaffolding for students to frame and direct the group discussions.

There was a more concrete structure for discussion which could possibly make it clearer to students how to put their ideas across with relevant supporting details or to refute ideas suggested by their group mates. This was in contrast to the discussion in the Pre-Video where there were hardly any disagreements as the discussion and ideas tended to be similar to each other.

The modelling in the Video also led to the group huddling together voluntarily to facilitate more effective discussion. In addition, they tried to define roles when doing their group work which led to less negative behaviour such as snatching and hitting and more positive behaviour like the encouragement of peers. The students also delved deeper and more systematically into discussion, trying to follow the model shown in the Video, resulting in an increased variety and number of ideas generated which impacted their collaborative writing. In fact, the high ability student S1 showed the most improvement in behaviour and idea generation over the period of study.

Significance

This is an original study which provided insights into the classroom discussions of a group of students in a Singapore primary school in a collaborative writing context This study provides educators with a case study on how young learners can be taught effectively to engage in productive discussions and sets the stage for the future development of educational videos that could impact on the quality of learning of the students in this area.

This study suggests that the C.I.D model of discussions adapted from Toulmin's model of argumentation could be an effective and simple model to scaffold young learners to present their ideas and disagreements logically. This is invaluable to educators who seek to improve the critical thinking and communication skills of students as part of the 21st century suite of skills.

Conclusion

Although in recent years, there has been increased emphasis on the importance of group work and communication, the efforts have largely been concentrated at the secondary and higher education levels. Few studies have addressed the need and methods for elementary learners to engage in productive discussions during group work. Primary school teachers and students alike are left to their own devices and struggle to keep afloat in this new wave of collaborative learning. In this study, a model to scaffold the discussion process was created to help these

young learners learn how to present their ideas and disagreements logically. An instructional method of using modelling through videos provides a lifeline for teachers to teach their students how to engage in productive discussions. Findings suggest that the method used enabled students to discuss productively with more instances of evidence-based thinking and disagreements. This ultimately led to an increase in the quantity and quality of ideas generated.

Future longitudinal studies on the long-term effects of C.I.D on classroom discussions could be conducted to ascertain the reliability. The model could also be transferred to other subjects or aspects of English language learning. Further, research could also be done at other levels to investigate the generalizability or scalability of the study.

References

Bandura, A. (1977). *Social learning theory*. New York, NY: General Learning Press.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bizup, J. (2009). The uses of Toulmin in composition studies. *College Composition and Communication*, 61(1), W1-W23.

Blanke, B. L. (2009). *Understanding mathematical discourse in the elementary classroom: A case study*. Unpublished doctoral dissertation, Corvallis, OR: Oregon State University.

Britton, J. (1969). Talking to learn. In D. Barnes, J. Britton, & H. Rosen (Eds.), *Language, the learner, and the school* (pp. 79-115). Harmondsworth, UK: Penguin.

Cazden, C. B. (1986). Classroom discourse. In M. C. Wittrock (Ed.), *Handbook of research on teaching*. (3rd ed., pp. 432-463). New York, NY: Macmillan.

Dickson, V. (2005). The nature of student and teacher discourse in an elementary classroom. *Curriculum and Teaching Dialogue, 7*(1), 109-122. Retrieved from http://search.proquest.com/docview/230469077?accountid=12691

Duplass, J. (2006). *Middle and high school teaching: Methods, standards, and best practices*. Boston, MA: Houghton Mifflin Company.

Erduran, S., Simon, S., & Osborne, J. (2004). Tapping into argumentation: Developments in the application of Toulmin's argument pattern for studying science discourse. *Science Education, 88*(6), 915-933.

Garfinkel, H. (1967). *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.

Krussel, L., Springer, G. T., & Edwards, B. (2004). The teacher's discourse moves: A framework for analyzing discussions in mathematics classrooms. *School Science and Mathematics, 104*(7), 307-312. Retrieved from http://search.proquest.com/docview/195202873?accountid=12691

Locker, K. O., & Keene, M. L. (1983). Using Toulmin logic in business and technical writing classes. In W. K. Sparrow, & N. A. Pickett (Eds.), *Technical and business communication in two-year programs* (pp. 103-110). Urbana, IL: National Council of Teachers of English.

Nystrand, M. (2006). Research on the role of classroom discourse as it affects reading comprehension.

Research in the Teaching of English, 40(4), 392-412. Retrieved from http://search.proquest.com/docview/215342762?accountid=12691

Patton, M. (2001). *Qualitative Research and Evaluation Method*, 3rd Edition. Thousand Oaks, CA: Sage.

Pierson, J. L. (2008). *The relationship between patterns of classroom discourse and mathematics learning*. (Order No. 3324548, The University of Texas at Austin). ProQuest Dissertations and Theses, 176-n/a. Retrieved from http://search.proquest.com/docview/304482383?accountid=12691. (304482383)

Raedts, M., Rijlaarsdam, G., van Waes, L., & Daems, F. (2007). Observational learning through video-based models: Impact on students' accuracy of self-efficacy beliefs, task knowledge and writing performances. In G. Rijlaarsdam (Series Ed.), & P. Boscolo, & S. Hidi (Vol. Eds.), *Studies in Writing: Vol. 19. Writing and motivation* (pp. 219–238). Oxford, England: Elsevier.

Richmond, G., & Striley, J. (1996). Making meaning in classrooms: Social processes in small-group discussions and scientific knowledge building. *Journal of Research in Science Teaching, 33*(8), 839-858.

Rijlaarsdam, G. C. W., Braaksma, M. A. H., Couzijn, M. J., Janssen, T. M., Raedts, M., van Steendam, E., … & van den Bergh, H. (2008). Observation of peers in learning to write: Practice and research. *Journal of Writing Research, 1*(1), 53–83.

Rummel, N. & Spada, H. (2005). Learning to collaborate: An instructional approach to promoting collaborative problem solving in computer-mediated settings. *Journal of the Learning Sciences, 14*(2), 201–241.

Sacks, H., Schegloff, E. A., & Jefferson, G. (1974). A simplest systematics for the organization of turn-taking in conversation. *Language, 50*(4), 696-735.

Schworm, S., & Renkl, A. (2007). Learning argumentation skills through the use of prompts for self-explaining examples. *Journal of Educational Psychology, 99*(2), 285–296.

Toulmin, S. (1958). *The uses of argument.* Cambridge, England: Cambridge University Press.

van Steendam, E., Rijlaarsdam, G., Sercu, L., & van den Bergh, H. (2010).The effect of instruction type and dyadic or individual emulation on the quality of higher-order peer feedback in EFL. *Learning and Instruction, 20*(4), 316–327.

von Aufschneider, C., Osborne, J., Erduran, S., & Simon, S. (2008). Arguing to learn and learning to argue: Case studies of how students' argumentation relates to their scientific knowledge. *Journal of Research in Science Teaching, 45*(1) 101-131.

Vygotsky, L. S. (1978). *Mind and society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Appendix 1: Video Script of the Instructional Video

PART I

TEACHER: It is group discussion time. Please get into your groups of three and decide on your roles. I would like you to look at the pictures carefully. Next, discuss what could possibly happen at the end of the story. Brainstorm a few solutions. Finally, discuss the ending of the story. You may also come up with a few endings that are related to the corresponding solutions. Please write your ideas down.

You are given 20 minutes to discuss. You may begin.

Students get ready their stationery and put away unnecessary items.

Caption – Make sure you have only the things you need on the table

Students huddle together around the tables quietly.

Caption – Position: Sit closer together before discussion

Students sit up straight.

Caption – Posture: Sit up straight and look at your friends when you are speaking or when they are speaking.

M: Alright, I will be the recorder since J was the recorder the last time.

J: Sure, I will be the timekeeper then.

R: That's great so I will be the encourager.

M: Yes, but all of us will be contributors and clarifiers of each other's ideas.

Caption – Assign roles and take turns to speak

- **Recorder – Write down the ideas**
- **Timekeeper – Keep time to ensure the group is on time**
- **Encourager – Be proactive in giving praises**
- **Contributor – Give ideas**
- **Clarifier – Clarify doubts on ideas given (Ask questions for more information)**

PART II

TEACHER: Great job in deciding your roles, M, J and R! Remember in your discussion, use clues from the pictures or articles that you have read (Clue) to support your idea (Idea). You may gently tell your group member whether the idea makes sense or not. (Disagreement)

M: Ok, let's begin by looking quietly at the pictures for 3 minutes before we discuss our ideas.

Students look at pictures quietly and carefully.

Caption – Look at the pictures quietly and carefully

After 3 minutes…

J: Time's up. Let's discuss our ideas. (Timekeeper)

M: Alright, we can see from the pictures that there was a boy who was walking across a plank when he dropped his watch into the water. Then, he took off his shirt and dived into the water (Clue). So I think that he will be able to retrieve his watch and he will be happy in the end! (Idea)

R: That is a good suggestion! (Encourager)

J: Why do you think he can retrieve the watch? (Clarifier)

M: From the picture, he dived into the water (Clue) so he looked like a competent swimmer.

J: I see but diving into the water does not mean he is a good swimmer (Disagreement).

Caption - J disagrees respectfully and explains why.

Caption:

The aspects of CID are:

Clue – <u>From</u> the picture, he dived into the water

Idea – <u>So</u> he looked like a competent swimmer

Disagreement – <u>But</u> diving into the water does not mean he is a good swimmer

R: Good points raised by both of you. I think we can make use of these ideas to give more suggestions for the solutions. How about this? I have read newspaper reports about children drowning in the water before (Clue) so the boy may start to struggle in the water and drown in the end! (Idea)

M: But that may not happen as someone may save him. (Disagreement)

Caption:

In this segment, the aspects of CID are:-

Clue – <u>From</u> previous newspaper reports on children drowning in water.

Idea – <u>So</u> the boy may start to struggle in water and drown.
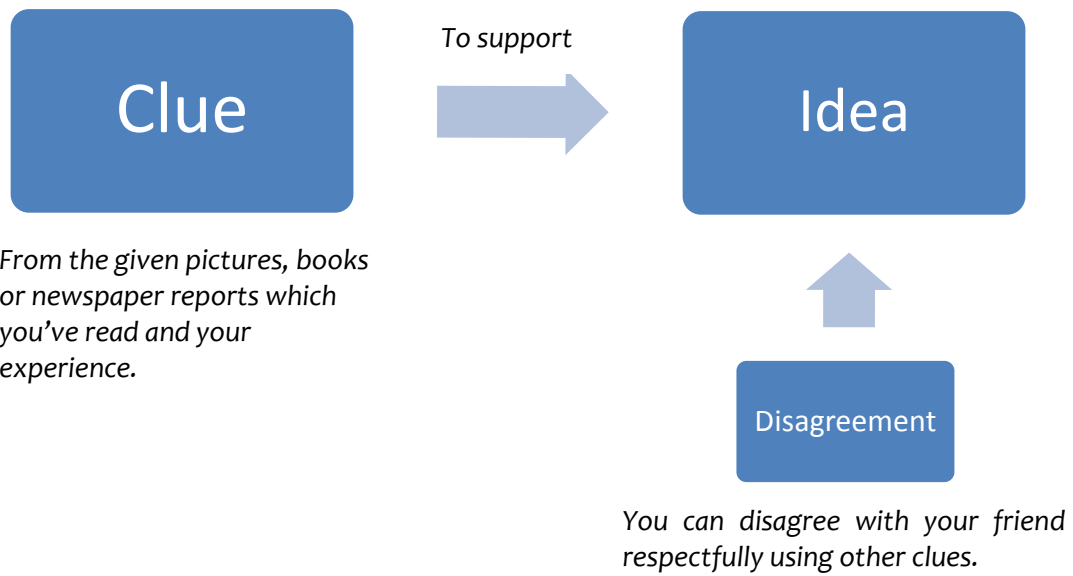
Disagreement – <u>But</u> someone may save him.

J: That is possible. Great idea! Also, the picture showed that the boy took off his shirt and shoes (Clue) so he may catch a cold too and be sent to the hospital (Idea).

R: Yes, he may be even be FROZEN! (Starts singing "Let it go"!)

J: Hey, ok, let it go already. We have to get back to work. We have about 15 minutes left. (Timekeeper)

M: Ok back to serious work. The picture did not show the boy doing any stretching exercises before jumping into the water (Clue) so he may even get a muscle cramp as well! (Idea)

J: I have read from a Young Scientist magazine that there are crocodiles in rivers (Clue) so the boy might eventually be eaten up by the crocodile! (Idea)

R: But there are no crocodiles in the Singapore River (Disagreement).

J: But how do you know this is in Singapore? (Disagreement)

R: Yes, you are right.

M: Oh, maybe he did not see a sign that says "No swimming in the water. Fine $500" (Clue) so maybe the boy might also get arrested or fined for jumping into the water (Idea).

R: Wow, we have generated a lot of ideas now! Good work, everyone! (Encourager)

J: A gentle reminder here. We have only 10 minutes left. (Timekeeper)

M: Ok, let's look at the graphic organiser and decide on one solution to elaborate on then.

J: How about writing on the boy getting a muscle cramp then and someone saving him? We can also say he was shivering as the water was cold. It is more interesting whenever the character in the story faced some complications.

R: Wonderful suggestion! (Encourager) I agree. M, how about you?

M: We will go with that then!

Students proceed to start on their writing.

Summary Caption

  1. ***Before discussion***
       a. **Get into the right position and posture**
       b. **Assign roles**
       c. **Take turns to speak**

2. **During discussion**

Clue

From the given pictures, books or newspaper reports which you've read and your experience.

To support

Idea

Disagreement

You can disagree with your friend respectfully using other clues.

3. **Always**
   a. **Be respectful**
   b. **Be on task**
   c. **Remember your roles**
   d. **Contribute to the discussion**

Appendix 2: Activity Sheet for Students' Analysis

Names of group members: _____

Class: Primary 2 ( ) Date: _____

Look at the text below.

    a) Identify where the clues (C), ideas (I) and disagreements (D) are by annotating them.
    b) Circle the connectors that help you identify the CID.

M: Ok back to serious work. The picture did not show the boy doing any stretching exercises before jumping into the water so he may even get a muscle cramp as well!

J: I have read from a Young Scientist magazine that there are crocodiles in rivers so the boy might eventually be eaten up by the crocodile!

R: But there are no crocodiles in the Singapore River.

J: But how do you know this is in Singapore?

R: Yes, you are right.

M: Oh, maybe he did not see a sign that says "No swimming in the water. Fine $500" so maybe the boy might also get arrested or fined for jumping into the water.