

Establishing a Dialogic Mode of Discourse to Provide Scaffolding

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Abstract

Several recent studies have emphasized the role of discourse in language learning. However, it is important to examine the more detailed aspects of discourse and its impact on students' participation in the language learning classroom. Drawing on the principles of dialogic discourse suggested by Alexander (2008), this study explores the influence of teachers' dialogic moves on the establishment of a dialogic mode of discourse. The context for this study is Academic Communication courses in the Content and Language Integrated Learning program. The results of the analyses confirm that appropriate dialogical moves make it possible to maintain a dialogical mode of discourse among Japanese students, who are commonly considered quiet students. Additionally, it has been observed that a dialogical mode of discourse is an essential requirement for providing satisfactory scaffolding.

Keywords

Classroom Discourse, Dialogic Discourse, EFL, Scaffolding, IDZ

1. Introduction

The concept of dialogic instruction is originally rooted in the works of Bakhtin (1984), who differentiated between “dialogic” and “monologic” discourse. Bakhtin’s dichotomy and Vygotsky’s (1934, 1987) theory of language as social semiotics provide the basis for the study of dialogic classroom discourse. In sociocultural theory, it has been claimed that learning and development are achieved partly through dialog and that “education is enacted” through the interactions between teachers and learners (Rojas-Drummond, Torreblanca, Pedraza, Vélez, & Guzmán, 2013, p. 20). Additionally, many researchers have recently considered the concept of dialogic discourse (e.g., Alexander, 2008; Mercer & Littleton, 2007; Rojas-Drummond et al., 2013; Wells, 2004). In this study, by drawing upon the notions of dialogic discourse, scaffolding and the Intermental Development Zone (IDZ), I examine the nature of discourse generated in Japanese Content and Language Integrated Learning (CLIL) lessons. The main purpose of this study is to investigate how the application of dialogic moves maintains dialog that could provide the ground for the establishment of an adequate IDZ.

2. Theoretical Framework and Relevant Concepts

2.1 Vygotskian Concept of Language as a Semiotic Mediator

The semiotic mediation role of language indicates that language provides a tool for the participants to both interact with each other through “external speech” and to mediate their mental activities through “inner speech” (Vygotsky, 1934, 1987). In this approach, it is through experiencing interaction with others that the “functions of speech” are “internalized” and develop as “means for self-directed activity” (Wells, 2004, p. 22).

2.2 Concepts of Scaffolding, ZPD, IDZ, and Dialog as a Mediational Means

Dialog forms a space where the participants can negotiate meanings and modify their understanding through dialogic discourse. “Whenever the dialog that occurs in joint activity leads to an increase in individual as well as collective understanding, there is opportunity for each participant to appropriate new ways of doing, speaking, and thinking, and thus to augment the mediational resources that they can draw on, both in the present and in future activities” (Wells, 2002, p. 61). Regarding learner’s *future* capability and *dialogic assistance*, Vygotsky (1934, 1987) proposes the notion of the Zone of Proximal Development (ZPD). ZPD refers to the potential extent that each child can advance with the *assistance* of a more skilled person, for example, a teacher. In effective instruction, every individual’s ZPD has to be cautiously taken into account.

Although Vygotsky’s concepts have primarily regarded school-age children, they have been implemented with adult learners in several studies (e.g., Wells, 1993, 2004). Mercer (2008) asserts that through “dialogic support” or “scaffolding,” e.g., a teacher’s intervention, students’ learning can be enhanced more successfully. Vygotsky considers learning to be an active construction in which scaffolding aids the students in completing a task that they would not have been able to achieve without the help of a more knowledgeable person (Mercer & Littleton, 2007). Wood et al. (1976) initially introduced the concept of *scaffolding* as an assistance provided in other regulated interactions.

Mercer and Littleton (2007) considers ZPD a “static concept” that signifies “the mental state of an individual learner at any one time, rather than the dynamics of development through dialogue” (Mercer & Littleton, 2007, p. 19). Thus, he offers an alternative notion called the Intermental Development Zone (IDZ) for establishing a more “dynamic” and “interactive” relation between the student and the instructor in a more dialogic context. “The IDZ is meant to represent a continuing event of contextualized joint activity, whose quality is dependent on the existing knowledge, capabilities and motivations of both the learner and the teacher” (Mercer & Littleton, 2007). The teacher can help the learners

improve their zone of capabilities by establishing a successful IDZ and providing appropriate scaffolding. The IDZ is recognizable in discourse by “references to shared experience” and “invocations of common knowledge” (Mercer & Littleton, 2007, p. 19). Hence, the dialogic mode of discourse enables the participants to initiate and maintain an IDZ (Mercer & Littleton, 2007). In this sense, IDZ closely corresponds to the concept of dialogic teaching suggested by Alexander (2008). He suggests that for a discourse to be qualified as dialogic, it has to be collective, reciprocal, supportive, cumulative, and purposeful. Following Alexander’s model for dialogic discourse, Rojas-Drummond et al. (2013) categorize a list of features for each of the principles suggested by Alexander (for a detailed description of the features of dialogic discourse, see Appendix A).

3. Methodology

The data in this study are taken from a wider dataset collected for my dissertation, for which I recorded four different English teachers’ classes in the Content and Language Integrated Learning (CLIL) program at a university. English is the main medium for instruction in the lessons. Five lessons of each class were recorded at various times within the academic year: three lessons in the first semester and two lessons in the second semester. The reason for recording five different lessons of each class was to observe how the teachers and students generated the discourse during different activities such as speaking, listening, and reading tasks throughout the year. All the teachers who agreed to participate in this research were teaching Academic Communication (AC) courses, but the levels varied as follows: two intermediate-I, one intermediate-II, and one advanced-I class. All four teachers had had more than eight years of experience teaching English. One of them was Japanese and the other three were native speakers of English. The teachers’ pseudonyms are Mako, Jack, Kevin, and Nicole. None of the teachers were informed about the details of the research so that my presence would not influence their discourse structure. All the students’ names in this paper are pseudonyms as well.

The first two lessons of the classes were only audio recorded so that the participants would become used to the presence of the researcher, but the remaining three lessons were recorded using both audio and video recorders. After the lessons were transcribed, Alexander (2008) and Rojas-Drummond et al. (2013) framework was used to examine the dialogical features of the discourse.

4. Results and Discussion

Research Question: Which features of dialogic discourse are present, and how are they incorporated to generate dialogical discourse and to establish an IDZ?

To demonstrate some features of dialogic discourse as well as occurrences of scaffolding and IDZ in CLIL classes, several examples of transcribed classroom discourse will be presented. Three excerpts from the intermediate levels are chosen to examine how altered discursal moves by teachers can influence the quality of the dialog.

Example 1. Kevin's class

(Group work) T: Ok, think about some, think about questions, focus on “doctors” and “architects” (T while monitoring, is talking to different groups.).

15. T: Right, ok guys. Excellent, some good questions (some students are still speaking in Japanese). Ok guys, let's, let's summarize the best questions, some of the best questions. Em, I am gonna focus on only one, the doctor so, so your favorite question: what is your favorite question for a doctor?
16. S: Are you <fond of people>?
17. T: Are you <fond of people>? (writing it on the board) Nice. It's a very good question, very important question. And Aoi and Kentaro, what was-what was your favorite question?
18. S: What is the most important ability to be a good doctor? (very clear voice)
19. T: “What is the most important ability?” Now in fact, em, Taro, we had a different word for ability?
20. S: Skill.
21. T: Skill. “What is the most important skill to be a good doctor?” (writing on the board) Ok, eh, now I am gonna ask Rina, Yuka, and Kae, choose your favorite question, three or two of you.
22. S: “What do you think makes a good doctor?”
23. T: Really nice question. “What do you think makes a good doctor?” (writing on the board) Good question. Now I am gonna ask, Risa and Mayu, your favorite question, your best question.
24. S: “How do you care when you talk to patients?” (very clear voice)
25. T: “How do you care when you talk to patients?” (writing on the board) Mayu, can I ask you what do you mean by “How do you care?” What did you-? What is your meaning? “How do you care.” Do you mean “do you care?” or “how do you-” eh, because at the moment this is not English, so we have to change one word, “how do you....” That's why I want to know what you mean. What's your meaning?.... “How do you...?” What, what—ask me the question in a different way....
26. S: Worry.
27. T: Ahh, “what do you think about,” “what do you worry about,” “what are you concerned about.” Ah, in that case, “what.” Ok, so, I am gonna change this to “What are you concerned about when you talk to patients?” (writing on the board) Right, so, Mayu, “What are you concerned about when you talk to patients?” Very nice. Ok, now, Kanako and Minami, your favorite question between these about doctors.

Example 1 is chosen from the beginning of the second recorded lesson of Kevin's class. Here, the students have previously been assigned to prepare interview questions to either ask a doctor, a teacher, or an architect. At this point, the

teacher asks the students to compare their questions in pairs or groups first. While the students are engaged in the group work, Kevin instructs some groups. As he says, “focus on ‘doctors’ and ‘architects’,” he clearly is directing them to the goal of the task. This could be considered as an evident sign of being *purposeful*. Furthermore, by allowing them to compare their homework in groups, he is making the task more *collective*. This way, students will be more confident to share their ideas in the class later. In the next stage, in order to elicit students’ responses, he explicitly states the plan of the next activity as “I am gonna focus on only one,” which again makes it a *purposeful* move. His use of the word “let’s” also implies that he considers this plan a *collective* action. In addition, the nature of the questions of the task is to some extent authentic as he is seeking their “favorite questions.” As a *reciprocal* action, he writes their ideas on the board so that they can discuss them later. Based on the observation of Kevin’s lessons, it has been observed that he regularly keeps nominating different students by calling their names. By doing this, he is obviously providing the opportunity for all the students, which is a *collective* move, for example, turns 17, 19, and 21. At turn 19, very clear evidence of *scaffolding* takes place as Kevin reminds Taro of a word that he has already learned and Taro replies instantly. As an example of “shared experience,” it verifies that the IDZ is being maintained reasonably. It also indicates that the teacher is being *supportive* by providing a guided dialogic enquiry. At the next teacher’s turn, he names all three members of a group and emphasizes “three or two of you.” In this way, he is once again highlighting the *collective* nature of the task. Furthermore, it is noteworthy that almost all the students respond in a very clear and audible voice, despite the fact that many Japanese students tend to be quiet and inaudible in many of the observed lessons. When Mayu expresses a semantically wrong answer, Kevin does not correct it on the spot, he instead writes it on the board and tries to have her correct her own mistake by asking, “do you mean” and “we have to change one word.” This confirms the very much *supportive* nature of *scaffolding* provided by the teacher.

Example 2. Nicole’s class

19. T: ... Ok, for now, our idea, something new. I practice yoga. Always. Always. Anybody? Sometimes? Never? Oh! I recommend it. Always. Even on the train. On the train I practice. Just sitting straight. Breathing meditating, calm. It’s good. How about a new idea? Your idea? You have no idea? How do you relax? ... How do you bring down stress, reduce stress? Ok? <New>, any new idea? Anyone? Really? . Really, no ideas? Or no speaking? Too shy! I want new ideas. Please help me. Ayako, do you have a new idea?
20. S: I always go to karaoke.
21. T: You attend karaoke. That’s a good one. Karaoke is good. Always? Anyone else attend karaoke for stress release? Ok 3, 4, 5. Ok! Good. Good one. Anyone else? Kae, do you have

- any stress release technique? No? Nothing? <Kae>? Do have a stress reduce technique?
22. S: Watching films.
23. T: Watch films? Ok. Ok, you watch movies, films. Anyone else watching films to relax? I often do. At night, go home, a cup of tea, watch a movie. Ok. No one? Nobody watches movies to relax? Now don't worry. Always, sometimes, never. Just sometimes. Anyone watches a movie? Ok, 3. ... *
24. S: Play an instrument.
25. T: Play an instrument. Anybody play music? Guitar? Piano? Violin? Yes? Who plays a musical instrument? ... Sometimes? Ok. "Playing musical instrument?" (writing on the board) Very good way. Anybody listen to music? Did you answer "listen to music?" Ok. We listen. Listen to music. What kind of music? What kind of music is good for relaxing? ... Who listens to music? What kind of music do you listen to?
26. S: <Slow rap>
27. T: Slow rap.
28. S: *... *
29. T: * [00:24:34.11] Slow piano. * Slow, just slow music. Slow tempo. What kind of? Classical or romantic music, slow pop music? Is it a music genre?
30. S: No.
31. T: No? What kind of music do you listen to? What KIND of music? What genre?
32. S: Classical.
33. T: Classical! Good. Anyone else listen to music? ... What kind of music?
34. S: Classical music.
35. T: Classical music. Aa! Recently, recently, I have been listening to classical music. I listen to baroque (writing on the board). Do you know baroque music? It's classical music: Mozart, Haydn, Handel. They say, they say baroque music has one hundred or 60 beats per minute. Per minute, one minute. So many beats. Ok? So it matches your heart. And [if you] slow down [your] heartbeat, [you] can relax. Recently, I was in another class, university class, teaching English teaching method. One method is called Suggestopedia. It is not so wide known or so popular. But in the 1970s, it was, wow! Kind of a wow method. And the person, the man who created this method, he got the idea from yoga. And in the class, he plays music and students listen to a story. They have an impure Suggestopedia class. Students sit in big, comfortable chairs. They listen to baroque music and completely relax, maybe listen to a story. And the teacher reads the story with the background music and does actions for the story and then the students copy the teacher. His thinking is the students are relaxed, and they can catch more vocabulary, more learning. Is it true? I don't know. I don't know. But of course, students can learn more when they're relaxed. If you are anxious, too anxious, I remember we learned eustress: a little bit of stress is good. A little bit pressure is good but too much no learning, no learning. Ok? So yeah, music is good. Music makes us happy, feel relaxed. Our brain is more open. Ok good. Any more techniques?
36. S: Laugh.
37. T: Laugh. I like this one. He laughs. Can you laugh easily?
38. S: Yesss!
39. T: Lucky! Lucky! How do you do it? Do you have special technique? Or it's natural?
40. S: I talk with my friend and watch comedy movies and...
41. T: Ok! Watch comedy, watch films. Comedies. Good. Anyone else? Ok, one technique, sometimes, sometimes my junior high schools students are so wow! Scary!

Example 2 is taken from the third recorded lesson of Nicole's class. At the beginning of the excerpt, there is evidence of *supportive* action. By saying "Even on the train. On the train I practice. Just sitting straight," Nicole models her own experience for the purpose of encouraging students to participate in the talk. Then, she tries to elicit some ideas from the students by insisting, "Any new idea?" "Really, no ideas?" and "I want new ideas. Please help me." Repetitions, making long pauses and invitations for participation through open questions—all of these techniques in her first statement confirm that she is trying to be both *collective* and *supportive*.

However, it seems that it takes too much effort from the teacher to have students express their ideas in this lesson. At the next turn, Nicole appeals for more ideas from other students by asking open questions for "anyone else" to answer; in this way, her appeal could be considered a *cumulative* move. Some moves made by Nicole indicate that she is trying hard to make the task as cumulative as possible since she incorporates a student's previous answer to elicit more ideas from other students and provides "elaborate feedback" to confirm what the student has said. For example, she says, "I often do. At night, go, home, a cup of tea, watch a movie."

In turns 25, 29, and 31, she follows up this theme of "music for relaxing," asking further questions for "extension" and asking students to "expand" their answers; in this regard, it is a sign of both *reciprocal* and *collective* moves. There is also some evidence of a *supportive* move when she shares her own idea to model: "I listen to baroque" and "Do you know baroque music?" (turn 35). Later, in the same turn, she refers to a concept that they had learned before: "I remember we learned eustress; a little bit stress is good." As this statement refers to a "shared experience," it has some characteristics of an IDZ. However, the IDZ is not well maintained, as there is not enough "dynamic" interaction between the teacher and the students in this turn.

Following the teacher's elicitation for the students' "techniques," a student mentions "laugh" as a technique for reducing stress. Nicole then follows up his response by asking, "Can you laugh easily?" and "How do you do it?," which signifies a *reciprocal* move that leads to a short dialogic mode of discourse. However, this dialogic mode is interrupted by the next long teacher's turn. Interestingly, the student's response in turn 40 was one of the longest utterances made by a student in this lesson.

Example 3. Mako's class

1. T: All right. So ... Today-today we will go on to Chapter 6, and the-we will discuss a new topic, which is pollution. And I believe that there are some students who belong to-What can we call *chichikiyukako*?
2. S: Environmental law.
3. T: Environmental law students are in this class. Right? So this is your topic.
4. S: UH.
5. T: Ha?! (teacher laughs) Right? It is your topic. Well ... And amm ... So I'm gonna start with this question. Aa! What kinds of pollution are there? I mean, what are some forms of pollution? . That we have here in this world. ... Anyone? What are the forms of, different forms of pollution? Different kinds of pollutions? ... Hi, environmental students?
6. S: Air pollution.
7. T: Air pollution. Ok, ok, air pollution. And what others?
8. S: Water, water pollution.
9. T: Water pollution. Yeah. Water pollution. Air, water, what else?
10. S: *
11. T: Hmm? What? Yes?
12. S: *Soriddo!*
13. T: Solid? *?
14. S: *Dojou.*
15. T: Ok, soil?
16. S: Soil! Soil!
17. T: Solid is *katai*. Right? S O I L. Ok, let's write it down. Ammm, air, air pollution, water pollution, soil pollution. What else?
18. Ss: (whispering, trying to say something)
19. T: Environmental law, come on.
20. S: *
21. T: What? Oh! Yeah, yeah, yeah! What did you say?
22. S: Sound or light.
23. T: Sound pollution ... Sound pollution, for example?
24. S: Aa, karaoke.
25. T: KARAOKE? Karaoke sound! Karaoke! Ok.
26. Ss: (whispering) Factory.
27. T: Factory, noise from the factory?
28. S: Yeah.
29. T: Ok, sometimes. Does anyone live near the factory? No? Ok.
30. S: Air force space.
31. T: Aah! Near the air force? . Aaah! I see. And you hear from aaall the noise from the air force? From the plane? Ok, flying near aa above you, right? ... All the time, oh! You hear the noise from the plane. Yeah? Ok, sound. Any other sound ... Pollution? Ok, then let's go on. Aaa, you said sound or ...?
32. S: Light.
33. T: Light. Light, light pollution. For example?

The excerpt from Mako's class is the beginning of the third recorded lesson. At

the very beginning of the lesson, we can see that some elements of a *purposeful* action are present: “Today we will go on to Chapter 6, and we will discuss about a new topic, which is pollution.” Here, not only does the teacher explicitly announce the purpose of the lesson, but she also highlights that it is going to be a *collective* discussion, since she employs the word “we.” Then, she asks students for the translation of the word *chichikiyukako*, which is evidence of a *collective* move. In turn 5, by posing open questions, she provides a *cumulative* condition for the discussion.

Later, she directly asks environmental students to engage in responding, which again is an indication of a *collective* move. The questions such as “and what others” and “what else” make the discussion more *reciprocal* as she invites more ideas from other students (turns 7, 9, and 17). Later, when in turn 20, a student responds in an inaudible voice, she follows up with: “What? Oh! Yeah, yeah, yeah! What did you say?” This is a very clear example of a *collective* move. In addition, she uptakes the next turn by asking for an example; thus, the discourse becomes more dialogic and continues thereafter. At the end of turn 31, in order to elicit more answers from the students, the teacher provides *scaffolding* when she says, “you said sound or...?” Here, this scaffolding serves the purpose of proceeding with a dialogic mode. This instance of scaffolding is based on “shared knowledge,” and it is “interactive” as well. Hence, we can claim that the IDZ is established satisfactorily.

5. Conclusion

It is commonly believed that Japanese students rarely participate in or initiate the flow of communication in language learning classes. Tsui (1996) states that “[t]he problem of getting students to respond is particularly acute with Asians students, who are generally considered to be more reserved and reticent than their Western counterparts” (p.145). However, this lack of interest in participation is not necessarily a sign that the students are not attentive in following the theme of the lesson. The image of “Asian students as passive and submissive” should not be interpreted to mean that they simply “want to sit in class passively receiving knowledge” (Littlewood, 2000, p.33, cited in Nakane, 2007, p.21). According to Nakane (2007, p.20), Japanese students’ silence can be associated with their cultural background of “maxim of modesty,” “face threatening act,” and “listeners’ responsibility in understanding the topic.”

Thus, in this study, I investigated the effective moves implemented by the teachers that could lead to Japanese students’ participation in a dialogic mode. However, the analyses of the lessons revealed that establishing a successful IDZ is not easily achievable in teaching Japanese students. In the case of Nicole’s

lesson, it can be observed that she took advantage of several dialogical moves in her discourse, i.e., reciprocal, collective, supportive, cumulative, and purposeful. Yet, many students either remained silent or made short and hesitant responses. Additionally, the teacher had to keep asking them to participate, and she repeated the questions quite often. That is why, despite all the dialogic moves made by the teacher, the lesson's discourse cannot be considered dialogic. As an example, the only student's long statement (turn 40) was interrupted by the teacher's turn. In this case, the teacher could have asked the student to expand on his statement to make the dialog more reciprocal. This reveals the fact that the exclusive use of dialogical moves does not necessarily result in a dialogical mode of discourse. Hence, it is important to ponder how and when to utilize the appropriate dialogic mode.

The analyses of Mako's class indicated that she had less difficulty in creating a dialogical mode. One reason might be that she was conscious to students' slightest attempts to participate, as in turns 10, 12, and 20. Furthermore, the fact that the students felt comfortable participating at the beginning of the lesson implies that they were attuned to a more dialogical mode through practice in prior lessons.

Kevin also insisted on making students involved, and he used many instances of supportive moves so that the students felt comfortable responding. However, he always provided the students with enough thinking time, usually in groups, before asking any questions. For this reason, unlike in Mako's class, there were not many occurrences of impulsive questions or uptakes in his lessons. The students' responses were usually preplanned and controlled. For example, when Mayu asked an incorrect question (turn 24) and the teacher asked her to correct it, despite all the support provided by the teacher, Mayu was unable to come up with the correct form since she was not prepared enough. However, as mentioned earlier, the IDZ was established when the proper assistance was provided in turn 19.

All the evidence supports the fact that it is not only the implementation of dialogic moves that can lead to establishing a dialogical mode as well as IDZ but how they are employed makes a considerable difference in encouraging the students' participation.

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Appendix A.

Analytical System for Characterizing Dialogical Discourse (Adapted From Rojas-Drummond et al. (2013))

Dimension	Communicative Acts
A) Collective: Teachers and students address learning tasks and solve problems together, whether as a group or as a class, and participate as a learning community. Teachers (or students) orchestrate various forms of participation, including the planning and organization of activities, as well as the assignment and taking of turns.	<ol style="list-style-type: none"> 1. Teacher manages turns by shared routines (rather than through high stakes competitive bidding). 2. Teacher distributes turns evenly among students. 3. Teacher combines the routine and the probing when assigning turns. 4. Teacher and students participate in carrying out the task or solving the problem. 5. Teacher and students plan or organize the activity together. 6. Teacher employs a questioning strategy of extension (staying with one child or theme) rather than rotation (questioning around the class or group).

	<ol style="list-style-type: none"> 7. Teacher gives students thinking and talking time (instead of pressuring them to provide instant responses). 8. Teacher gives turns to less able, quiet, or compliant students. 9. Students ask questions and/or provide explanations (not just the teacher). 10. Teacher encourages students to engage in collective activities.
<p>B) Reciprocal: Teachers and students listen to each other; exchange and share ideas; negotiate meanings and perspectives; consider alternative viewpoints, possibilities, and hypotheses; and make reasoning explicit to achieve common understanding. Ground rules are invoked and used during discussions. Teachers encourage students' participation, as well as pupil-pupil dialogs.</p>	<ol style="list-style-type: none"> 1. Teacher and students make ground rules for communication explicit. 2. Teacher encourages students' expression of different viewpoints. 3. Teacher invites students to expand on an utterance (e.g., by asking "What is that?", "Why?", or "What might be...?"). 4. Teacher provides arguments. 5. Teacher asks students to justify their opinions. 6. Teacher and students negotiate meanings and perspectives. 7. Teacher and students compare different perspectives or alternative views. 8. Teacher encourages the expression of different possibilities, using words such as "perhaps" and "might." 9. Teacher and students consider different alternatives before arriving at a solution. 10. Teacher or students acknowledge when they change their mind. 11. Teacher and students make decisions or arrive at solutions jointly. 12. Teacher and students talk about the talk. 13. Teacher encourages pupil-pupil dialogs.
<p>C) Supportive: Teachers and students create a positive atmosphere where everybody articulates their ideas freely. Teachers promote scaffolded dialogs that guide and prompt, reduce choices, and expedite the "handover" of concepts and principles. Teachers promote understanding and learning through modeling, guided participation, dialogic enquiry, and aided discovery.</p>	<ol style="list-style-type: none"> 1. Teacher encourages students to express their ideas freely, without fear of embarrassment or retribution. 2. Teacher asks students to express their interests. 3. Teacher makes students' achievements explicit to them and/or to others. 4. Teacher models productive ways of communication (e.g., by showing how to "think aloud"; how to explain; how to argue by providing reasons, justifications, and evidence; and how to hypothesize). 5. Teacher provides aid that reduces degrees of freedom, so as to allow pupils to concentrate on certain key aspects of the task. 6. Teacher uses "retreat and rebuild" exchanges (repair processes where pupils' mistakes are used to reconstruct knowledge). 7. Teacher highlights or explains the process of arriving at a solution. 8. Teacher uses cued elicitation to encourage students to "discover" new knowledge or ways to solve problems.

	<p>9. Teacher reformulates, elaborates, recaps, and/or reviews learning with pupils.</p> <p>10. Teacher encourages students to solve problems by themselves (withdrawing support when students demonstrate competence).</p>
<p>D) Cumulative: Teachers and students build on their own and each other's ideas and link them to coherent lines of thinking and enquiry. Knowledge is jointly constructed, integrated, extended, elaborated, and/or transformed through spiral chains of questioning, responding, discussing, and/or providing feedback. Emphasis is given to the temporal development of learning.</p>	<ol style="list-style-type: none"> 1. Teacher asks questions that explore students' levels of understanding. 2. Teacher asks open questions (rather than invitations to guess the one "right" answer). 3. Teacher asks questions that challenge students' statements or assumptions. 4. Teacher provides informative feedback on which pupils can build (instead of positive, negative, or non-committal judgment, or mere repetition of the respondent's answer). 5. Teacher provides elaborated feedback on a student's response, which explains why it is adequate or inadequate. 6. Teacher uses praise discriminatingly (filtering out the habitual "good," "excellent," "fantastic," "brilliant," etc.) 7. Teacher builds knowledge from one to another student in a chain (using the responses of previous students to direct the interactions with subsequent students). 8. Teacher and/or students link prior knowledge (from outside or inside the classroom) to the current topic or activity.
<p>E) Purposeful: Teachers plan and steer classroom talk with specific educational goals in view. Goals and intentions are made explicit and guide problem solving and learning. Teachers promote metacognitive reflection on the purposes, significance, and/or usefulness of what is learned. Learning is contextualized, situated, and projected into the future.</p>	<ol style="list-style-type: none"> 1. Teacher or students make shared purposes of talk explicit. 2. Teacher or students make the demands or purposes of an activity explicit. 3. Teacher or students share their intentions with others. 4. Teacher or students plan courses of action or ways to solve problems. 5. Teacher or students create links between what is being learned and a wider context (outside of the classroom or the school). 6. Teacher and students evaluate the extent to which they have achieved their goals. 7. Teacher encourages students to evaluate their own learning processes and/or outcomes ("What did I learn?", "How did I learn it?", "What do I need to improve my learning?"). 8. Teacher invites students to reflect on the importance and/or usefulness of what is learned ("why do I need to learn x?"; "how/where can I apply what I learned?"). 9. Teacher makes the learning trajectory visible (e.g., by explaining how certain knowledge will be useful in the future).

Appendix B.

Conventions used for transcription (adapted from Wells, (2004))

(Layout) Turns are numbered consecutively. Within turns, each new utterance starts on a new line. Speakers are indicated by name or initial letter of name.

(-) Incomplete utterances or restarts are shown by a hyphen on the end of the segment that was not completed. Continuations after an intervening speaker are shown preceded by a hyphen.

(.) One period marks a perceptible pause. Thereafter, each period corresponds to one second of pause, e.g., “Yes. ... did.”

(?!) These punctuation marks are used to mark utterances that are judged to have an interrogative or exclamatory intention.

(Caps) Capitals are used for words spoken with emphasis, e.g., “I really LOVE painting.”

(< >) Angle brackets enclose segments about which the transcriber was uncertain.

(*) Passages that were insufficiently clear to transcribe are shown with asterisks, one for each word judged to have been spoken.

() When two participants speak at once, the overlapping segments are underlined and vertically aligned.

(“ ”) Words that are quoted or passages that are read aloud are enclosed in inverted commas.

() Interpretations of what was said or descriptions of the manner in which it was said are enclosed in parentheses.

[] Square brackets enclose descriptions of other relevant behavior.