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THE ROLE OF ARTEFACTS AND GESTURES IN CLIL LESSONS

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Abstract

This classroom-based study, which took place in a French Polynesian primary school context, attempts to highlight the role played by social artefacts on the quality of dialogic exchanges and mediation of learning in beginner level young foreign language learners in Content and Language Integrated Learning (CLIL) classes. The CLIL experience described in this study is based on a sociocultural framework and the principles of the Action-Oriented approach (AOA). The study employed classroom observations and video recordings to gather data, which were then analysed qualitatively using discourse analysis. The discourse was split into meaningful segments and studied by focusing on the role social artefacts and gestures played during dialogic exchanges. The analysed data indicated that socially-mediated activity designs which enable the use of artefacts and gestures facilitate the mediation of learning, extend dialogic exchanges and improve the communicative quality of classroom interactions.

Introduction

This study attempts to highlight how artefacts and gestures (hereafter A&G) could extend dialogic exchanges and improve the fluency and communicative quality of classroom interactions of beginner level young foreign language learners in Content and Language Integrated Learning (hereafter CLIL) classes. This classroom-based research study took place in Tahiti, French Polynesia. The participants of the study were primary school children from 9 to 10 years of age whose native language (L1) was French. French Polynesian primary schools implement the French National Curriculum with some adjustments to adapt for local needs and French is the medium of school instruction. In French Polynesian primary schools, English as a Foreign Language was first introduced in 2006 as a pilot project, and it was progressively extended to all French Polynesian elementary schools. The CLIL experience that we describe in this paper is one of a number of multilingual learning projects that are part of the French Polynesian primary school context.

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Theoretical Stance and Literature Review

The CLIL experience described in this study is based on the principles of Action-Oriented Learning (AOL) and a sociocultural framework. Within this sociocultural perspective, activity theory (Leontiev, 1974, 1978), as an extension of Vygotsky's sociocultural theory (Vygotsky 1978), provides a coherent framework for understanding the role A&G play in CLIL activities.

CLIL is a dual-focused educational approach that uses a foreign, regional or local language or another official state language to teach a school subject. The objectives of CLIL are to develop both language skills and build disciplinary content knowledge. The term CLIL was first introduced to educational literature with the bilingual/multilingual education movement prompted by the European Commission in the late '90s. The 1990s were a period when multilingualism and language education became a key issue in improving communication among European Union (EU) states (European Commission 1995, 2003, 2008; Eurydice Network 2006).

Teaching school subject content through the medium of a foreign/second language is not a new approach. CLIL shares similarities with other bilingual education approaches such as content-based instruction (CBI) and immersion programs (French immersion) which are widely used in North American contexts. The success of integrating language and content teaching has been empirically supported by research (Cummins and Swain, 1986; Stoller, 2008; Stryker and Leaver, 1997). The reports on these positive results on bilingual education have affected CLIL practices positively. Thus, for the last decade, CLIL research and practices have been on the rise not only in Europe but also in other continents (e.g. Admiraal et al 2006; Dalton-Puffer, 2011, Lasagabaster 2008, Lasagabaster & De Zarobe 2010; Turner 2013). Although the CLIL approach is gaining popularity, it does not yet offer a comprehensive educational model based on a robust theoretical frame. Most of the CLIL practices are based on educational policies, pragmatic pedagogies, and curricular guidelines (Dalton-Puffer, 2011).

CLIL also shares some of the principles of the Action-Based Learning (ABL) approach. ABL is an approach recommended by European Council publications, more specifically by the Common European Framework of Reference (CEFR) for Languages, which is a reference text for foreign language teaching in a European context (Council of Europe, 2001). This approach views language learning as a situated activity and places the learner at the centre of the learning process. This means that the learner is viewed as an active agent in a socioculturally mediated activity. The action-based approach is also related to other approaches, such as content-based and task-based instruction (Adler & Milne, 1997; Lier, 2007).

Since the 1990s there has been an increasing interest in applying sociocultural theories to L2 learning. Theorists who employ a sociocultural stance regard language learning principally in social terms (Lantolf, 2002, 2006). The key idea of sociocultural theory (SCT) is "...the centrality of language as a 'tool for thought' or means of mediation, in mental activity..." (Mitchell & Myles, 2004, p.194). From this stance, learning is viewed as a socially mediated activity that is contingent on face-to-face interaction and joint attention (Mitchell & Myles, 2004). According to Vygotsky, knowledge is first constructed on social planes through collaborative interaction, and then it is appropriated on personal planes. Vygotsky (1978) proposed that engaging in full social interaction with more experienced others (such as parents, teachers, and peers) enables the child to construct knowledge that s/he is not capable of doing alone. To explain this phenomenon Vygotsky introduced the concept of the Zone of

Proximal Development (ZPD). ZPD refers to the difference between what a learner is capable of doing without guidance and what s/he is capable of doing with guidance.

Within this sociocultural perspective, the process of supportive dialogue, which directs the others' (learners' or peers') attention to the key features of learning using successive steps, is known as scaffolding. Scaffolding in language learning helps learners to notice crucial language input. The term was first introduced to educational literature by Wood, Brunner and Ross (1976) and later developed by Bruner (1978) as an extension of Vygotsky's concepts of ZPD and social mediation.

Mitchel and Myles explained the ZPD as the domain of knowledge or skill in which the learner cannot function independently, and could only achieve the desired outcome if s/he receives scaffolded help. In the schematic representation of ZPD shown in Figure 1 we present a schematic representation of the notion of ZPD that we applied to a formal educational context.

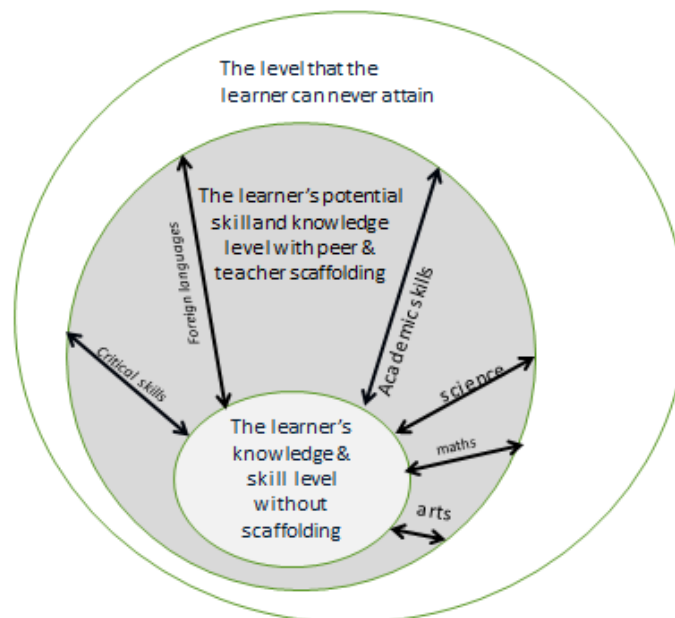


Figure 1. A Schematic representation of the notion of Zone of Proximal Development (ZPD) in an educational context

The amount of help each learner needs may vary depending on the domain. In some content or language areas, some learners may need more scaffolded help than others. That is to say, a learner may need little scaffolding in a foreign language class whereas the same learner may need a lot more scaffolding in a science class and it can be vice versa for another student (Gabillon & Ailincui, 2013). The difference between learners could be used in an efficient way by involving more competent learners in the scaffolding process. Classroom activities which enable collaborative exchange in classroom settings may allow learners to provide this help in a natural way. SCT views human made material and symbolic objects as artefacts. According to Swain, Kinnear and Steinman (2011) all artefacts, whether material (e.g. table, pencil, books) or symbolic (e.g. language, concepts, belief systems) have the potential to become mediating means. Activity Theory (AT) (Leontiev, 1974, 1978; Engeström, 1987), which is an extension of Vygotsky's sociocultural theory, provides a robust theoretical framework for researchers who seek to understand how artefacts mediate learning. Swain et al

(2011) maintain that individuals interact with the symbolic and material world around them, and that all forms of mental activity are mediated by these artefacts.

The Study

Our study consists of several work packages. Prior to the present study, between 2012 and 2013 we did preliminary research on CLIL. The aim of this experimental study was to investigate if CLIL was possible with breakthrough (beginner) level young learners through irregular 30-minute CLIL lessons. The results we obtained from this preliminary work package suggested that CLIL is possible with young beginner level foreign language learners but requires a rich extra-linguistic context and socially mediated activity designs (see Gabillon & Ailincăi, 2013). Following the results obtained from this preliminary work we designed a research activity to observe the role played by A&G in CLIL classes with beginner level learners, which we will describe in this paper.

The study described in this paper took place from 2012 to 2014 in two elementary state schools in Tahiti. The participants were 9-10 year-old elementary school children with breakthrough level English. The learners had a maximum of two years' English language learning experience and participated in science lab experiments that were carried out through the medium of English. A total of 30 children participated in our study. The study was carried out with the participation of two primary school teachers and two lecturers from the University of French Polynesia: an assistant professor who specialises in foreign language and second language acquisition and an associate professor in Education. For this study we observed three science lab lessons. These CLIL lessons used English as a medium for instruction. The lessons lasted between 25-30 minutes each and they were in the form of a group activity that involved 9 to 11 children in each group.

In our study we viewed classroom actions as social activity where learning is mediated by collaborative dialogue (see Figure 2).

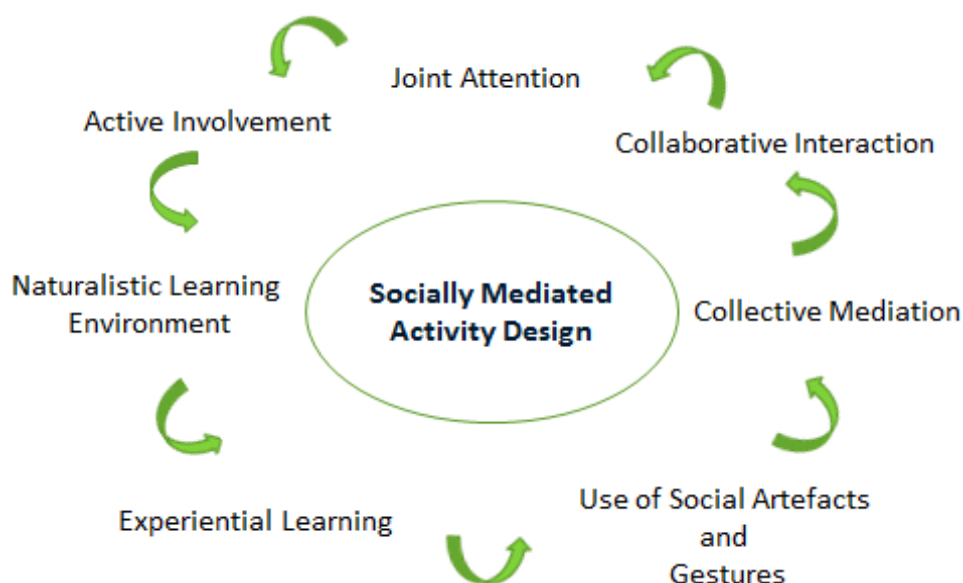


Figure 2. The activity design used in our CLIL lessons

Thus, we conceived CLIL lessons that employed socially-mediated activity designs to facilitate collaborative dialogue and to enable learning through joint attention. The aim of the collaborative dialogue was to provide learners with mediation (teacher and peer) to support both language development and disciplinary content learning. The science experiment activities aimed at creating a naturalistic learning setting and had recourse to a variety of sensory input (e.g. seeing, touching, smelling etc.). The activities also emphasised providing learners with experiential learning and hands-on experience to help them make meaning from direct experience. The CLIL teachers used simplified language forms and vocabulary and they had recourse to A&G to scaffold learning. In our study we considered A&G as one variable. Most of the time A&G were used together and separate analysis seemed difficult to carry out.

As I mentioned earlier, our previous CLIL experiences indicated a mediating effect of A&G on learning. Thus in this study we decided to shift our focus of observation and analysis on the use of A&G. Our foremost aim was to observe the role played by A&G during dialogic exchanges. The aims of this study can be summarised as follows:

- a) How did A&G mediate learning?
- b) How did the use of A&G influence dialogic exchanges?

In CLIL classes, especially with young learners who have little foreign language experience, the teachers need to make linguistic modification to keep learners interested and to help them understand content related notions. The primary objective of a CLIL lesson is to carry out meaningful interaction through which learners can learn new notions. The focus in a CLIL lesson may alternate between content learning and target language use at different moments of the lesson. This constant shift on emphasis may affect the amount of attention the teacher pays to the linguistic adjustments. Using artefacts and gestures can provide the teacher with a tool to make up for the learners' insufficient language competence to scaffold learning new concepts.

Methodology

In our study, we used discourse analysis to examine the data obtained from the CLIL classes we observed. Today face-to-face classroom interaction is viewed as a pivotal element of knowledge construction and classroom dynamics. Discourse analysis has been exponentially applied to the analysis of classroom exchanges to further the understanding of student learning and the role of dialogic exchanges in classroom settings. The corpus for this study was collected from three identical 25-to-30-minute CLIL lessons from three different groups of learners. Video recordings were used to obtain data and lessons were recorded in their entirety. The fact that the group sizes were small (9 to 11 pupils in each), allowed the researchers to have an uninterrupted view of each learner and record not only the linguistic data but also the nonverbal elements, (e.g. use of A&G, and facial expressions) of the phenomena observed. The videotaped data were then transcribed and the transcribed data were analysed both qualitatively and quantitatively using descriptive statistics.

The analysis procedure consisted of a series of stages involving different qualitative data processing techniques. First, the transcribed data were examined and re-examined to look for patterns and links within and across utterances in order to understand how, how often and why A&G were used and the consequences they produced. The steps that we used during our data analysis procedure can be summarised as follows:

1. During the conceptualisation stage after careful assessment of the transcribed data, we observed some patterns and links between the use of A&G, knowledge-building and knowledge/information-sharing processes.
2. After the identification of persisting patterns, we coded the data into categories. In these categories, we looked at the occurrences of A&G, how they were used and the effects they produced.
3. Then we split the data into smaller, manageable meaningful segments in order to be able to explain the phenomenon in a more methodical way. We defined the boundaries of discourse segments through identification of an opening move, which marked the beginning of a topic or a new action, and through identification of a framing move, which indicated the end of an exchange.
4. We re-grouped and labelled the data segments utilising a conversation analysis model similar to the one offered by Kerbrat-Oreccioni (1998). Although the analysis model proposed by Kerbrat-Oreccioni views conversation analysis as probing only linguistic components, the analysis model that we employed also integrated extra linguistic elements such as A&G. After splitting and re-grouping the data, we labelled the data segments using the following categories:
 - a) *Limited exchange (LE)*: This is a short exchange of a maximum of two moves that contains either two verbal interventions, or a verbal and a non-verbal intervention, which indicates that the message has been understood and the learner is responding to it.
 - b) *Truncated Exchange (TE)*: This type of exchange demonstrates that the learner has not understood the message and is unable to respond. A truncated exchange consists of an opening move and a failed move which results in closure of the exchange.
 - c) *Re-launched Exchange (RE)*: This sort of exchange describes an exchange type that attempts to restart a truncated exchange.
 - d) *Truncated-Re-launched-Failed Exchange (T-R-FE)*: Describes an exchange type which fails after an attempt to re-launch a truncated exchange.
 - e) *Extended Exchange (EE)*: An exchange type that contains more than two learner moves on the same topic which indicates that the interlocutors are able to communicate on the subject.
 - f) *Truncated-Re-launched-Extended Exchange (T-R-EE)*: describes an extended exchange type which is successfully re-launched after it is truncated.
5. Paul Grice's (1975) conversational maxims were also applied to evaluate conversational quality of the exchanges:
 - a) *The Maxim of Quantity*: Giving only the necessary amount of information - not too much or too little.
 - b) *The Maxim of Quality*: Only speaking the truth- not knowingly giving false information.
 - c) *The Maxim of Relation*: Being relevant to the current topic of conversation.
 - d) *The Maxim of Manner*: Avoiding ambiguity or obscurity in your speech.

Analysis and discussion

The analysis of the corpus we gathered indicated that A&G helped classroom exchanges to continue without a break and added a communicative quality to the dialogic exchanges. Almost all of the exchanges we analysed corresponded to the maxims proposed by Grice et al (1975). Due to space limitations, in this paper we can provide only a few of the analysed discourse segments, as examples.

Extract 1 illustrates how using A&G (both by the learners and the teacher) mediated learning, contributed to carrying out of tasks and extended the exchange.

Extract 1

Extended Exchange (EE)

EE	1.	T: Ok. Do the experiment again (passes the jar to P5). Take some soap. Put it in water.	} -(A&G) scaffolding during instruction giving
	2.	P5: (Takes a jar and puts some powdered soap in it)	} -(A&G) non-verbal response
	3.	T: Stir it... (shows it), stir it very well.....	} - (A&G) scaffolding during instruction giving
	4.	Oh we can see bubbles (Children laugh).	} (A&G) comprehension check
	5.	What do you think? Is soap soluble or insoluble?(shows the jar)	} (A&G) comprehension check
	6.	P5: (Stirs) soluble. (Holds the jar up).	} -(A&G) responding
	7.	T: Why?	
	8.	P5: We can't see it here (shows the bottom of the jar). We can't see it here (shows the middle of the jar).	} -(A&G) scaffolding during explanation giving
	9.	T: (Laughs) we don't see it anywhere. Look at it. (shows the jar) Can you see any soap?	} - (A&G) scaffolding during clarification request
	10.	P4: Yes, soluble.	
	11.	T: OK? (Hand gestures to invite children to talk).	} -(A&G) scaffolding during elicitation
	12.	Ps: Soap is soluble in water.	
	13.	T: Thank you very much.	
	14.	Ps: You're welcome.	

Note. T=Teacher, P5= Pupil 5, Ps=: Pupils, EE= Extended Exchange, A&G= artefacts and gestures.

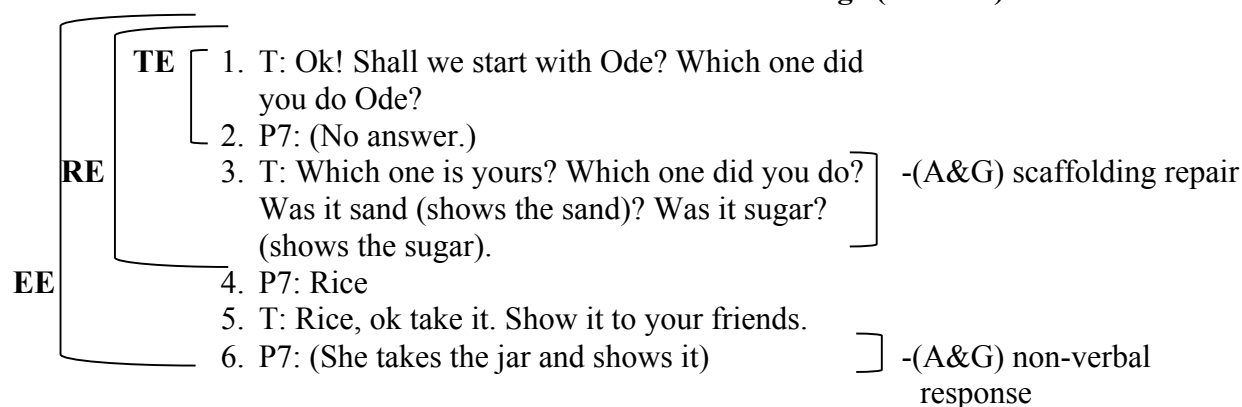
In Extract 1 above we observe A&G mediated collaborative exchange through providing scaffolding during the moments of instruction giving (moves 1&3) and comprehension checks (move 5). This particular extract also illustrates how learners utilised A&G to provide scaffolding during their explanations to clarify and justify the meaning of their utterances (move 8). Explanations given by the learner in move 8 could probably not have been possible without the use of the artefacts available within the vicinity of the learner. All of the moves in this extract conform to the maxims proposed by Grice (1975).

Extract 2 below has a clear pattern where a teacher is encouraging a shy learner to take part in a classroom activity. This short exchange is a good example to illustrate how a Truncated

Exchange (TE) could be extended using A&G. In this particular example the learner was unable to respond to the teacher's question because of a language structure which the pupil apparently had difficulty understanding. The teacher re-launched the exchange by modifying her language and supporting the linguistic modification with the use of A&G (move 3). The videotaped data clearly illustrated that the teacher's instant recourse to the objects and gestures contributed to the learner's comprehension and the natural flow of the dialogic exchange. The time interval between the teacher and the learner's moves was natural and the learner's reaction was free from any frustration. Although the exchange was short and the linguistic content (lexical and grammatical) modest, the exchange was linguistically appropriate and corresponds to the maxims of a social interaction. This simple exchange illustrates how the robust pragmatic dimension of an exchange could make up for linguistic simplicity. The situation was appropriate for the use of short language forms and pragmatic strategies both functional and interactional.

Extract 2

Truncated-Re-launched-Extended Exchange (T-R-EE)



Note. T=Teacher, P7=Pupil 7, TE=Truncated Exchange, RE=Re-Launched Exchange, EE=Extended Exchange, A&G= artefacts and gestures.

Next, Extract 3 exemplifies how the teacher used supportive dialogue to direct the learners' attention to the key concepts of learning using A&G in successive steps. In this particular exchange, the teacher used A&G to mediate student learning and to encourage learner participation while clarifying the 'solubility' concept. Although the exchange had non-verbal elements and one-word utterances, evaluation of the discourse using Grice's maxims illustrated that the exchange complies perfectly well with the cooperative principles of an exchange.

Extract 3

Extended Exchange (EE)	
EE	<ol style="list-style-type: none"> 1. T: we'll mix them (with water) and you'll tell me if they are soluble or insoluble. Now look at me. (takes a spoon), (takes some sugar)...(invites Ps with a hand gesture to talk) 2. Ps: sugar 3. T: and then I put it in a ...(touches the jar) 4. Ps: jar 5. T: Look! Can you see any sugar? (Points the bottom of the jar). 6. Ps: (some Ps) Yes-- (some Ps) Yes, I do. (some Ps) nod 7. T: Now I... stir it (demonstrates it). Stir it.....stir it.....stir it...(Teacher's repetition of the word 'stir' makes children laugh) . 8. T: Where's the sugar? Can you see it? (shows the jar) 9. Ps: No 10. T: it is ... Sugar is ... 11. Ps: Soluble 12. T: in ...(points at the jar) 13. Ps: water. 14. T: Sugar is soluble in water. Good.
	<p>-(A&G) scaffolding during elicitation</p> <p>-(A&G) scaffolding during elicitation</p> <p>-(A&G) scaffolding during concept building</p> <p>-(A&G) scaffolding during instruction giving</p> <p>-(A&G) scaffolding during elicitation/concept building</p> <p>-(A&G) scaffolding during elicitation</p>

Note. T=Teacher, Ps=Pupils, EE= Extended Exchange, A&G= artefacts and gestures.

Results

The overall results obtained from this CLIL research data indicated that the activity design that we used contributed to fostering meaningful use of A&G, which in return: a) provided scaffolding for learning, b) extended dialogical exchanges, and c) contributed to the amelioration of communicative quality and the fluency of the dialogic classroom exchanges.

A post task discussion with the learners in their mother tongue plainly indicated that the learners understood the scientific concepts conveyed through collaborative exchanges, regardless of their breakthrough level English. The classroom tasks were executed almost without any need for recourse to the learners' mother tongue (four moves in single word translations) and this gap was filled with the extensive use of A&G. Our overall data analysis has demonstrated that 58% of the collaborative dialogue (478 moves) in three CLIL lessons observed was in the form of EE (see Figure 3). Whenever there was a communication break the exchange was re-launched through use of the objects within the vicinity and through the wide use of extra-linguistic elements such as gestures. The analysis of the data clearly indicated that without the use of A&G, the majority of the exchanges would have been truncated exchanges with constant communication breaks. Although the learners' target language level was very low, the activities were carried out via natural dialogic exchanges and new concepts were constructed by using successive scaffolding with an extensive support bestowed by A&G.

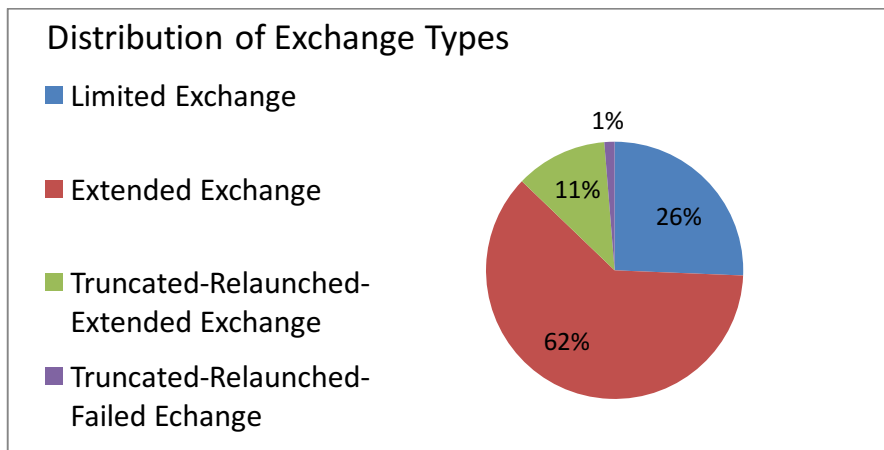


Figure 3. Learners' use of A&G to scaffold dialogic exchanges CLIL classrooms

Figure 4 below illustrates how the learners (n 30) used A&G during the dialogic exchanges in the sessions (4 sessions) we observed. Close data analysis indicated that the fact the learners were surrounded by artefacts during the science experiment provided them with rich and easily accessible scaffolding opportunities.

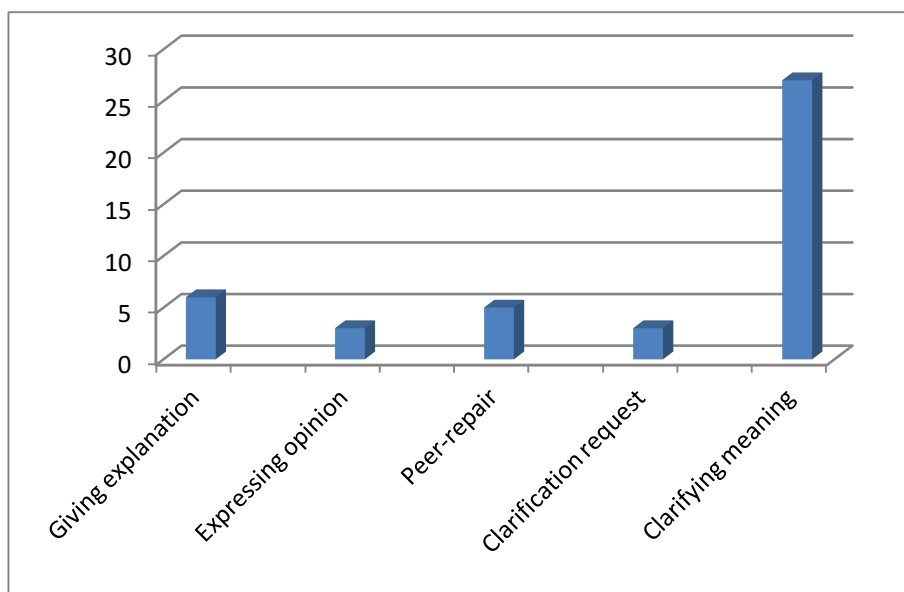


Figure 4. Learners' use of A&G to mediate dialogic exchanges

In some cases, although the learners did not have the necessary language skills, they were able to respond to the demands of the exchange by just giving a non-verbal response, such as demonstrating with the use of the artefacts (e.g. filling the jar when required following teachers' instructions and mixing ingredients), or just pointing, and nodding. They also answered the demands of the interactions by using A&G to support their language in situations where complex structures which the learner had not yet mastered were required (e.g. "bubbles here..." "...look not clear". The discourse analysis that we carried out indicated that in the majority of the cases, the learners had recourse to A&G to make their meanings clear. Figure 5 below provides an overall view of the teachers' use of A&G during

dialogic exchanges, which took place during the CLIL lessons we observed. The data indicated that in most of the cases A&G were used as a scaffolding tool to help the teacher elicit learner responses, to give instructions and to build new concepts.

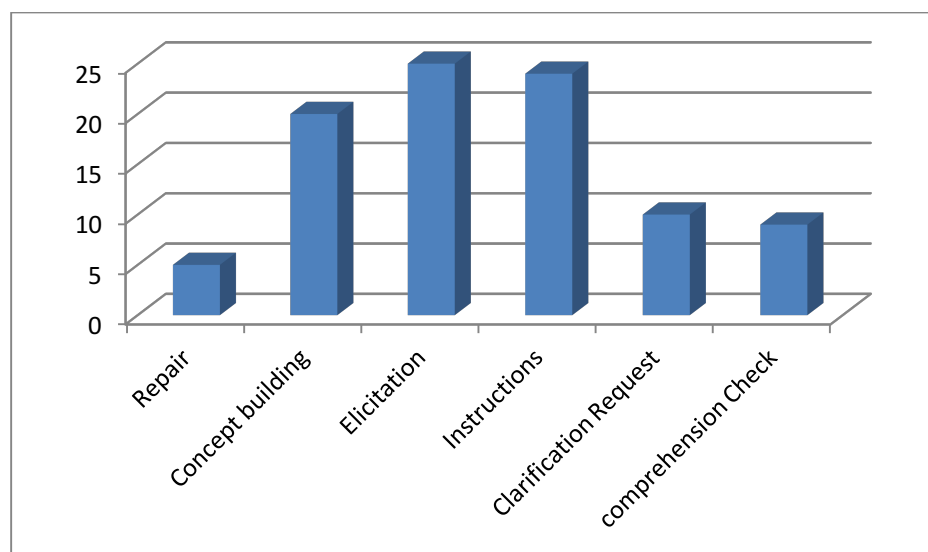


Figure 5. Teachers' use of A&G to mediate dialogic exchanges and learning in CLIL classrooms

Conclusion and Future Research Directions

The results we obtained via this research study clearly indicated that the use of A&G can extend dialogic exchanges and improve the communicative quality of classroom interactions.

In this particular research study, we were limited to two elementary schools. In our future research projects, we intend to investigate this phenomenon on a broader scale through gathering larger CLIL data from different Polynesian elementary schools. Starting from January 2015 the CLIL project will become a constituent of a larger project, which will investigate multilingual practices within the French Polynesian primary school context. The project will involve the ensemble of French Polynesian primary schools in five archipelagos that span an area as large as Europe. This project is financed by the *Ministere des Outre-Mers* (MOM), which is a French administrative department responsible for coordinating government actions in the overseas territories. Our part in this research project consists in building a corpus from CLIL practices and regular English classrooms from different elementary school classes. This corpus will later be analysed and used to inform our future projects. We intend to employ the data obtained via this research project to carry out comprehensive analysis methods to better understand the foreign language teaching practices in the French Polynesian context. We also intend to share the classroom implications of these experiences during pre-service and in-service education programmes.

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