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Why and How CLIL Works. An Outline for a CLIL Theory.

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1. Introduction

Content and Language Integrated Learning (CLIL) is a powerful and empowering way to learn languages. At the same time the approach is in line with European language policies on the promotion and implementation of multilingualism (Commission 2005; High Level Group 2007). As a result, most CLIL research is policy-driven research. While we do not want to question this, it is equally legitimate to look at CLIL from a completely different point of view, namely to consider CLIL as an innovative approach to language pedagogical practices in line with modern research about language learning and teaching as well as motivational aspects, cognitive development and learning and the brain. In this paper, an intricate approach towards CLIL is put forward, which – at the same time – is presented as a research paradigm for the future.

2. General aims of CLIL

Maljers *et al.* (2007) present an overview of European CLIL practices by having authors from twenty countries reflect on CLIL practices in their respective countries. One question presented to the authors was “Describe the aims of CLIL”. It is striking to see that most authors consider as the primary aims of CLIL teaching and learning: (i) the promotion of linguistic diversity; (ii) promoting language learning; (iii) increasing the learner’s proficiency; and (iv) internationalization. These are, of course, important goals but it seems to us that CLIL opens much more opportunities for learning than were hitherto put forward.

But before we explain this point of view, let us briefly discuss one rather unfortunate result of CLIL’s success in Europe, namely the tacit conviction that CLIL is about promoting English only. In Maljers *et al.* (2007) learning regional languages as target languages is only mentioned in the sections

devoted to France, Italy and Estonia. The others seem to take for granted that English is the target language to such an extent that Norway states that one of the goals of CLIL is improving learners' proficiency in English. While the importance of English is not questioned as such, we strongly advise school authorities to consider the introduction of local languages on primary school level before the introduction of English takes place.

3. Approaches to CLIL research

Our approach to CLIL research is wide-ranging, addressing the learning of languages, as well as subject matter knowledge, attitudinal and motivational approaches, cognitive development and brain research. In doing so we would like to stress that CLIL is not only a powerful way to learn foreign languages, but that learning language and subject matter at the same time has important consequences for learning in general in the sense that the brain is fundamentally altered (Blakemore & Frith 2005). We feel that these aspects remain largely unattended in current CLIL research. The following presents six tenets or principled approaches towards CLIL research.

Tenet 1. Target or second language development. Main research question: does the CLIL approach lead to better language proficiency in the target language compared to traditional approaches?

A distinction is made between primary school and secondary school results. As for primary school results, the answer to the research question above is unequivocally: yes. But there are a number of factors that are as yet unknown because they have not or poorly been researched. The development across various forms of proficiencies seems unevenly spread with respect to listening, speaking, reading and writing. CLIL education leads to native-like listening comprehension and erratic results as far as speaking is concerned. With regard to reading a distinction has to be made: if reading in the target language precedes reading in the first language, until 9 to 10 years of age the target language prevails as the most important language for academic affairs. The same is true for writing. If, however, the learning of reading and writing takes place in the first language, the learner's most important language for academic achievement remains the first language (cf. Braun *et al.* 2001, 2002, 2003; Lecocq *et al.* 2004; De Groot 2005; Jiménez *et al.* 2006; De Vriese 2007; Slembrouck 2007). It goes without saying that this observation is influenced by the number of CLIL hours in the curriculum. As yet it is unknown in what way language development is influenced in later stages.

Secondary school results do not yield the same results as primary schools although, in general, the answer to the research question above is also yes. However, results seem less uniform. Sometimes better results are reported compared to traditional methods, but sometimes no significant differences are found. Results seem to depend much more on individual variation, teacher characteristics and intra- and interpersonal variation and abilities. Finally, some scholars recommend doing research on pragmatic aspects of language acquisition and development (Lyster 1998; Gajo 2001; Huibregtse 2001; Admiraal *et al.* 2006; Gassner & Maillat 2006; Mewald 2007; Smit 2007).

Tenet 2. First language or mother tongue development. Main research question: does CLIL lead to improved first language development compared to traditional approaches?

The research question is related to a more general problem about the simultaneous acquisition of two languages. Children can easily acquire two linguistic structures in a natural environment at the same time. After a study of 14 acquisition studies Genesee (2003) concludes that lexical, syntactic and phonological development in bilingual children is comparable to monolingual children. But this seems to contradict Cummins's (2003: 63) statement that "the level of development of children's mother tongue is a strong predictor of their second language development". Here, it is to be reminded that Cummins is referring to minority children in a context of migration. In general, it can be said that there is a difference between acquisition processes for majority language and minority language children. This is a complex discussion that cannot be addressed within the scope of this paper.

Results from a Dutch/French CLIL primary school in a French-speaking environment in Wallonia, i.e. French-speaking Belgium, indicate that despite the fact that the pupils received 75% of their instruction in Dutch they easily attained the final goals in the mother tongue (French). Moreover, they attained higher scores in calibrated tests than monolingual children (cf. Lecocq *et al.* 2004; De Samblanc 2006; De Vriese 2007; Van de Craen *et al.* 2007a and b).

There are no arguments supporting the view that CLIL be detrimental to the mother tongue. If anything, there are more positive than negative effects (Bialystok 2004; Van de Craen *et al.* 2007a and b). However, this might not always be the case with migrant workers' children (Cummins 1984, 2003). There is some evidence that in language areas where a majority and a minority language compete, fear for language loss is frequently expressed as an argument against CLIL education (Lochtman *et al.* 2007).

Tenet 3. Subject matter knowledge. Main research question: does CLIL lead to better subject matter knowledge than traditional learning?

In primary schools there are no indications that subject matter knowledge would be less good in CLIL classrooms than elsewhere. If anything, teachers report the opposite, especially related to Maths (Van de Craen *et al.* 2007a and b). In secondary schools the results are more diverse. Some scholars argue that there are no differences in knowledge (Huibregtse 2001). Stohler (2006), for instance, reports “neither positive or negative consequences on the acquisition of knowledge” (Stohler 2006: 44) because language and knowledge are believed to be so intimately related that no distinction can be made between them. Other researchers suggest that the loss of implicit learning capacities through age might be of influence (Paradis 2004) while still others suggest inhibition as a determining factor (Bialystok 2005).

The state of the art with respect to subject matter knowledge suggests that: (i) In primary education subject matter knowledge seems to be boosted more than in secondary education. (ii) In secondary schools there seem to be few negative effects as a result of the CLIL approach. (iii) More research is needed to entangle the considerable number of context variables and their influence on older pupils’ knowledge acquisition.

Tenet 4. Attitudes and motivation. Main research question: in what way does CLIL influence attitudes and motivation vis-à-vis languages and language learning?

There exist few large-scale studies on attitudes and motivation in bilingual learners in a CLIL context. In Brussels, bi/multilingual young learners and adolescents show the following: (i) Young learners are highly motivated to learn languages and not only English (cf. Allain 2004). (ii) Adolescents show positive attitudes, no loss of identity and they consider bilingualism as a core value; moreover, it enhances their self-esteem and motivation to learn languages (Ceuleers, in print). It is not too far-fetched to extrapolate these results to CLIL pupils.

Tenet 5. Cognitive aspects. Main research question: in what way does CLIL influence cognitive development as compared to traditional (language) learning?

CLIL induces the learner to be more cognitively active during the learning process (cf. Bamford & Mizokawa 1991; Bialystok *et al.* 2005; Bialystok 2004, 2005; Cook 1997; Jäppinen 2005; Van de Craen *et al.* 2007a). The

neural substrate of this (see tenet 6) is that more neural connections are being made (cf. Fabbro 1999; Edelman & Tononi 2000; Blakemore & Frith 2005) and this, naturally, advantages young learners over older ones.

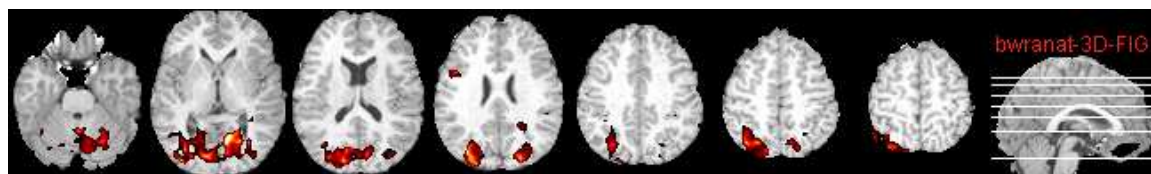
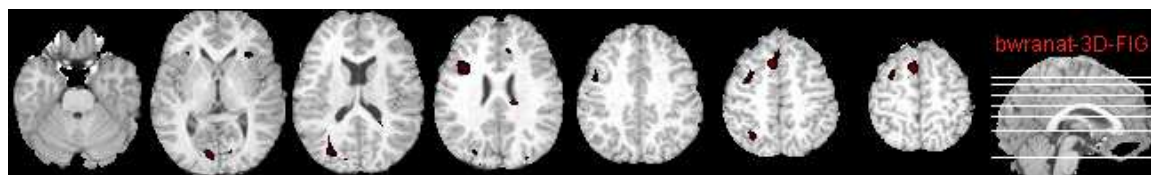
Yet, it would be wrong to suppose that cognitive added values are solely dependent on the CLIL approach as such. Wilburn Robinson (1992) examined twelve dozen studies between 1960 and 1990 and found that young children who have studied a foreign language performed better on standardized tests and tests of basic skills in English, Maths and Social Studies. Young children who had four or more years of foreign language scored higher on verbal tests than those who had had four or more years in any other subject area (cf. Wilburn Robinson 1992; see also Cooper 1987; Webb 2000). Cognitive advantages seem related to early (foreign) language learning independent of the methodology. Hence, there is no doubt that young children exposed to CLIL cognitively benefit from this.

Tenet 6. Brain matters. Main research question: how does CLIL affect brain development as compared to traditional (foreign) language learning approaches?

The most general aspect related to brain workings in CLIL and/or immersion learning environments is that the bilingual brain needs less effort, i.e. less work load to perform specific tasks under scanning conditions (Blakemore & Frith 2005; Bialystok *et al.* 2005; Mondt 2007). Consider the following images issued from on-going research (see Mondt *et al.*, in preparation).

The first picture shows the average results of brain scans in monolingual children (age 8-9) carrying out a simple calculation task. Picture 2 shows the same in bilingual children. Picture 3 shows the result of children issued from multilingual education.

It is clear that the bilingual brain hardly has to work (Picture 2). No work load at all is shown. Monolinguals have to work much harder (Picture 1) whereas school bilinguals (Picture 3) show an intermediate position.

Picture 1. Monolinguals*Picture 2. Bilinguals**Picture 3. School Bilinguals*

It is clear that learning in a CLIL environment results in discrete brain activity, which seems to echo the results of the cognitive aspects. These effects are the embodiment of brain plasticity in young learners and are as such not the results of CLIL itself. However, the aforementioned results show that CLIL exploits this plasticity and as such helps in creating ‘better’ brains (Blakemore & Frith 2005).

4. Conclusion

The six tenets that have been presented illustrate that CLIL is more than just another method of language learning. CLIL has implications for the learning process as a whole and is as such an innovative way of looking at (language) education. However, we also feel that the tenets could become the basis for a comprehensive CLIL theory.

The implicit language learning processes that CLIL entails in young learners shows transformations from lower order aspects (i.e. learning a language) to higher order ones (i.e. cognitive added values) and this is commonly called “emergence” (cf. Johnson 2001). As there is no pre-programmed plan, only self-organization processes seem to govern this transformation (cf. Oudeyer 2006). As a result, CLIL theory joins general learning theory and brain research.

A CLIL theory is then based on principles of self-organization (see also Van de Craen & Mondt 2007) and strongly resembles theories of emergence. It also takes into account cognitive and brain aspects as well as motivation theory. In this sense, CLIL is more than ever innovative and can contribute substantially to both linguistic and social theory.

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