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## Innovative Education and CLIL

### Καινοτόμος Εκπαίδευση και η μέθοδος CLIL

**Piet Van de CRAEN and Jill SURMONT**

*In this contribution CLIL is considered to be an important driver for educational change. From the mid-nineties onwards CLIL was introduced in Europe as a reaction to poor results regarding language teaching and learning and for promoting the internationalization of education. Some aspects of CLIL are counter-intuitive and lead to resistance towards its implementation. Some of the paradoxes that accompany these reactions are summarized before tackling what we think is the most important aspect of CLIL, namely the learning issue. We argue that both the learning of languages as well as the subject matter is positively influenced because of the particular way in which learning takes place in a CLIL environment. Particular reference is made to implicit learning, and language pedagogical techniques such as scaffolding and translanguaging. In the last part of this contribution some side effects of CLIL implementation are examined, namely school organization and reading and dyslexia.*

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Στη συγκεκριμένη εργασία η μέθοδος CLIL θεωρείται μια σημαντική κινητήρια δύναμη για την εκπαιδευτική αλλαγή. Από τα μέσα της δεκαετίας του '90 η μέθοδος CLIL προτάθηκε στην Ευρώπη ως μία 'αντίδραση' στα μη ενθαρρυντικά αποτελέσματα για τη διδασκαλία και την εκμάθηση γλωσσών, αλλά και για την προώθηση της διεθνοποίησης της εκπαίδευσης. Όμως ορισμένες πτυχές της CLIL εγείρουν προβληματισμούς και αντιδράσεις για την εφαρμογή της. Μερικά από τα παράδοξα που συνοδεύουν αυτές τις αντιδράσεις συνοψίζονται πριν από την αντιμετώπιση, αυτού που νομίζουμε ότι είναι η πιο σημαντική πτυχή της CLIL, δηλαδή του ζητήματος της μάθησης. Εμείς υποστηρίζουμε ότι τόσο η εκμάθηση της γλώσσας στόχου, όσο και του γνωστικού αντικειμένου επηρεάζονται θετικά λόγω του ιδιαίτερου τρόπου με τον οποίο επιτελείται η μάθηση στο περιβάλλον της CLIL. Ιδιαίτερη αναφορά γίνεται στην έμμεση μάθηση, και στις παιδαγωγικές τεχνικές του γραμματισμού, όπως στην «σκαλωσιά» και τη «διαγλωσσικότητα». Στο τελευταίο μέρος της εργασίας αυτής εξετάζονται κάποιες συνέπειες από την εφαρμογή της μεθόδου CLIL, όπως η οργάνωση του σχολείου και η ανάγνωση και δυσλεξία.

**Keywords:** CLIL, multilingual education, implicit learning, cognitive development.

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## 1. Introduction

This contribution aims at showing in what way Content and Language Integrated Learning (CLIL) is innovative not only to language education but to education in general. The focus will be on the learning process itself. The simple fact that a language is learned, at least in the very beginning, in an implicit way, has consequences for the learning process itself. The implicit learning process has a different status from explicit learning and we feel that a substantial amount of success that CLIL has enjoyed in the past decade is due to this. In a first part a summary of some of the arguments against the CLIL approach is given. Second we will focus on CLIL learning and third, some explanations for the success of this way of learning are given. It is further argued that CLIL equals innovative education because of its impact on the learning process itself.

## 2. The anti CLIL discourse

The introduction of CLIL in European schools since the mid-nineties has been a success story. In general, three reasons can be distinguished for embracing this new approach. First, the conviction in many countries that traditional language education, despite great efforts and energy devoted to it, does not yield good results. The results of the latest European Survey (2012), unfortunately, do confirm this. Second, the idea that education should aim at internationalization and teaching in an additional language is a good answer to this need. This is, for instance, the case for a country like the Netherlands where CLIL developed in such a context (Eurydice 2006). Thirdly, there is the desire by a number of scholars to change learning and teaching of languages and to turn it into a more scientific and integrated approach. CLIL is also the prima candidate to turn to as the foreword of the Eurydice report clearly indicates (Eurydice, 2006).

But implementing CLIL means 'change', and any change in education is difficult. As Machiavelli wrote in *The Prince*: "There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things". This applies particularly well to education. No wonder then that CLIL has come under attack.

Bruton (2011, 2013), based in Spain, summarized some of the counter-arguments, although not convincingly, according to us. Van de Craen (2004) and Chohey-Paquet (2008) have also highlighted some negative aspects, which often present themselves in the form of paradoxes. Although they spring from the Belgian context, all of these paradoxes can easily be found in other European countries as well. Van de Craen (2004) distinguishes three paradoxes. (i) While, on the one hand, there exists great admiration and appreciation for – especially young – speakers who speak well and effortlessly foreign languages, there exists, on the other hand, great fear and anxiety if in education subject-matter is introduced in a foreign language. This fear is often grounded in some kind of unwarranted and irrational ideological and historical belief preventing clear and objective thinking and evaluation... (ii) While the results of teaching in a foreign language have invariably shown good results many are still convinced that it is impossible to learn in a language that one does not completely master. For them, learning simply cannot take place... (iii) While there is unrestrained belief

in the merits of scientific research for results related to, for instance, the pharmaceutical industry, research results in the human sciences are often questioned especially if they are not consistent with the idea of the political administration that be. Since many ideas and findings related to CLIL are counter-intuitive and require some kind of openness to internationalization and educational change, it is no wonder that politicians have trouble accepting this approach.

Chohey-Paquet (2008) distinguishes no less than six paradoxes overlapping with some of the above. *The political paradox*. While nobody questions the importance of language knowledge, at the same time there is 'legal rigidity' and "there are political barriers which inhibit concrete progress" (Chohey-Paquet, 2008, p. 2). *The cultural paradox*. Some regions or countries have no language learning tradition: Italy and Wallonia come to mind. For instance, Chohey-Paquet (2008) shows how Walloons think that they simply cannot speak a foreign language... In fact, they are referring to the notorious bad way foreign language teaching took place in Wallonia for decades. *The institutional paradox*: 'we are against it, it will not work and you are going to fall flat on your face' referring to some of the teachers' attitude towards this specific change. *Structural and social paradoxes* expressed in the reactions of some teachers and other adversaries: 'you will not find teachers, they will not be paid and CLIL is only good for elite children'. Needless to say that, in Belgium but also elsewhere, some of the best results were obtained in vocational schools (see Denman et al. 2013). *The organizational paradox*. Schools use the approach for marketing reasons, i.e. in order to attract more pupils, but otherwise it is a gimmick. *The (language) pedagogical paradox*. Pupils cannot develop competencies in a foreign language and teachers will be unwilling to cooperate.

To overcome some of the issues mentioned here, CLIL schools should carefully prepare the introduction of CLIL by bringing together the teachers involved and convince them of the value of the approach. At the same time parents should be involved as well and, of course, local school authorities should support in one way or another the new initiative (see Mehisto, 2007 for an interesting bucket list). It is also advisable that the school creates a CLIL team that closely follows up pupils and teachers alike after the start. Already after a few months results can be observed: pupils of whatever age speaking the target language with confidence and teachers feeling at ease with the approach. Let us now turn to more interesting aspects of the CLIL approach, namely the learning process itself.

### 3. Learning and CLIL

Over the years, particularly from 2000 onwards, an impressive number of publications have reported on the superior results of the CLIL approach relating not only to language but also to a number of issues (see Huybregtse, 2001; Jäppinen, 2005; Dalton-Puffer & Smit, 2007; Lorenzo et al., 2009; Marsh & Wolff, 2007; Van de Craen et al., 2007a,b,c; Zydatis, 2007; Marsh et al., 2009; Lasagabaster & Ruiz de Zarobe, 2010; Murray, 2010; Dalton-Puffer, 2011; Linares et al., 2012). Of course, the fact that the pupils' language proficiency in CLIL classes is superior to that in non-CLIL classes should not come as a surprise. What does come as a surprise though is the fact that superior results on mathematics are often reported even in those classes where mathematics was not part of the CLIL activities (Van de Craen et al., 2007 a,b,c; Murray, 2010).

The importance of this finding can hardly be overestimated. If it were just language proficiency that was affected, CLIL would be nothing more than another language learning approach, be it a good one. Now that we know that there is more than languages at stake

CLIL becomes a genuine tool for educational innovation. This means that learning itself is affected and that we should pay attention to learning processes in order to evaluate the CLIL approach.

A number of scholars and visionaries alike have launched ideas about what learning should be like in the future in anticipation or response of what is often referred to as the global village (cf. Bruner, 1997; Robinson, 2001; Fullan & Langworthy, 2014). In this respect Delors (1996) distinguishes the following learning aspects or tensions as he calls them. They can also be considered as challenges for education because, even twenty years ago, it was clear that education in the 21st century had to be re-evaluated. (i) The tension between the global and the local, referring to becoming world citizens without losing one's roots, (ii) the tension between the universal and the individual, i.e. attention to local culture should not dwindle, (iii) the tension between tradition and modernity, i.e. "change without turning one's back to the past" (Delors, 1996, p.17), (iv) the tension between the short and the long-term, "many problems call for a patient, concerted negotiated strategy of reform [...] precisely [...] where education policies are concerned" (Delors, 1996, p.17), (v) the tension between the need for competition and the concern for equality of opportunity, i.e. attention to human factors, furthermore (vi) the tension between the expansion of knowledge and "the capacity to assimilate it" (Delors, 1996, p.18) and, finally, (vii) the tension between the spiritual and the material or the importance of traditions and convictions versus pluralism.

Delors' tensions	How CLIL copes with them	Remarks
Global vs. local	The use of local languages in education from a young age onwards does not exclude international languages	Also applicable in areas where many languages are spoken, e.g. Africa
Universal vs. individual	International languages vs. standard European languages	All or most languages are cherished in this way
Tradition vs. modernity	Educational traditions can naturally be preserved in a CLIL environment	Schools/authorities can opt for two local languages first and later on add an international one
Short vs. long term views	Any language in a CLIL environment will yield positive results fro the learner	The advantages of CLIL apply for any language
Competition vs. equality of opportunity	CLIL environments are stimulating and lead to equality of opportunity	Both aspects should not exclude one another
Expansion of knowledge vs. capacity for assimilation	CLIL always kills two bird with one stone	Learning content through a language expands knowledge and enhances learning
Spiritual vs. material	CLIL increases tolerance and openness	CLIL includes many - often implicit - social implications that can be exploited by teachers

Table 1: How CLIL contributes to the tensions of the education of the future

We feel that CLIL environments can answer to these challenges while CLIL "unlocks the door to [an] unpredictable world. It has the potential to facilitate intercultural communication, internationalization, and the mobility of labour, and help people to adapt to various social

environments” (Jäppinen, 2006, p. 22). The following table summarizes the potential contribution of CLIL with respect to the tensions mentioned above (Table 1).

It is clear that the simple activity of learning in a different language from the one you are used to, i.e. an additional language, answers to many challenges that were identified in Delors’ (1996) paper. But there is yet another aspect that explains the power behind the CLIL approach even more convincingly. This is the contribution of implicit learning and its influence on the learning process itself.

Implicit learning was coined by the psychologist Reber in 1967 (see Reber, 1967, 1993) to refer to the unconscious learning of complex stimuli without the learners being aware that they were actually learning. This kind of learning is opposed to explicit learning where conscious learning is acquired and that is mostly associated with a school environment (see Rebuschat 2015 for an overview). Today, consensus exists with respect to the following aspects related to implicit learning. (i) It creates some kind of sense of intuition, i.e. learners are unaware of the acquired knowledge yet they can apply it, (ii) implicit knowledge is more robust in case of neurological disorder and (iii) ‘implicit knowledge might also be retained more easily and longer than explicit knowledge’ (Rebuschat, 2015a, p.xiv). Apart from psychologists also linguists have shown a long-standing interest in implicit and explicit learning and second language acquisition (SLA) (see for instance Hulstijn, 2003, 2015; DeKeyser, 2003; Ellis, 2015; Lamont, 2015). Unfortunately, these scholars have not yet taken to account learning in a CLIL context, which would undoubtedly enlarge their horizon even more.

Language learning in a CLIL classrooms starts out exclusively in an implicit way. The emphasis is on activity, i.e. learning by doing in the target language and hardly any attention is paid to its formal aspects. The pre-primary and primary schools, our team guides, are recommended, until the fifth form of primary school, to entirely focus on content and to disregard formal aspects of the language, such as verb conjugation for instance. From the fifth form a language teacher introduces the target language in a more formal way. As a result, target language learning takes place in an implicit way and gives the learner a considerable advantage over learners in a more traditional environment (Van de Craen et al, 2013) because later on, when more formal aspects of the language are introduced, the learner can use his proficiency and, in this way, find a balance between implicit and explicit knowledge (Lyster, 2007).

This focus on implicit learning can only be realized when the so-called CLIL-pedagogies are used. We distinguish three important aspects of CLIL pedagogies. The first one is the meaningful environment in which previous knowledge is activated. The second one is that content is learned through interaction and that the learner plays an active role in the “discovery” of it. The final aspect is the one where language support is offered through scaffolding.

To create a meaningful environment that builds on previous knowledge, translanguaging is used. Translanguaging is a pedagogic approach in which the entire linguistic knowledge of the learner is seen as one single resource (García & Li Wei, 2014). This moves away from the traditional “one language per classroom” principle, where usage of other languages is not allowed. In a CLIL classroom usage of mother tongues and other known languages is allowed and in some cases even recommended. This will allow learners to bridge gaps in their knowledge and also overcome terminology issues. The idea behind this is that through translanguaging the learner can build on previously acquired knowledge and increase their

insights in both language and content. As mentioned in the introduction on cognitive development, learning means building on previous experiences and knowledge. This is exactly what translanguaging does, namely using previous (language) knowledge to create new knowledge and insights. Usage of translanguaging in the classroom therefore stimulates the natural learning process by keeping the anxiety levels of the pupils as low as possible.

Activating methods are language pedagogical approaches that force learners to participate in the creation of knowledge instead of just listening to what the teacher has to say (Dufresne et al., 1996). By giving the learners an active role in their learning process - instead of just letting them process the given input - they not only have to listen to the target language, but they are also forced to use it. Of course it is important that the teacher supports them, and this is best done through 'scaffolding' and 'translanguaging'.

Scaffolding is a teaching method that requires the teachers to support the learner in bridging the gap between what is already known and mastered and what is yet unknown and not yet mastered. This gap is what Vygotsky (1978) called the "zone of proximal development" (see further). There are three different types of scaffolding namely verbal scaffolding, content scaffolding and learning process scaffolding (Echevarría et al., 2010). The first one means that the (CLIL) teacher adapts his language to the level of the learner in order to ensure that communication can take place. Content scaffolding means that the teacher is constantly using techniques (such as discussions) that assist and support the learner in their understanding of and engagement with the content. Learning process scaffolding are techniques (such as teaching to each other) used by teachers to support learners working processes but also their learning processes (see Massler et al., 2011 for an elaborate discussion on how this is translated itself to the classroom). Research has shown that CLIL classes provide more opportunities for learners to use discourse pragmatic strategies as they often use the foreign language for more diverse functions and for more complex meaning negotiations than their peers in language lessons (Nikula, 2005).

Combining these approaches creates a meaningful learning environment that is not teacher-centred - Freire (1974) calls it "the banking model" - but pupil-centred, where learning is achieved through activating methods, scaffolding and translanguaging. Important to note is that these pedagogies not only influence the acquisition of language, but also the uptake of information. By forcing the learners to actively take part in the learning process, higher order thinking processes are stimulated as well as an increased insight in conceptual and procedural knowledge. In such a way it becomes clear how thinking processes and knowledge construction are related and how the interactive methods of CLIL stimulate both content and language acquisition.

As a result the advantages are not limited to language proficiency. There are also cognitive advantages (see Struys 2013 for an overview). How can these differences between CLIL and non-CLIL pupils be explained? A simple explanation can be found in the intensity with which CLIL learners are confronted in the learning process. As Jäppinen has stated "learning in CLIL environments proved to be initially more demanding than in environments where the mother tongue is the medium of learning" (Jäppinen, 2006, p. 28). This heavier workload, especially in the initial stages of the CLIL approach, leads to better performance later on. This is also why multilinguals show an advantage over monolinguals (Costa et al., 2009) and why multilingual pupils from immersion programmes show cognitive advantages (Bialystok & Barac, 2013).

It is also hard not to make a comparison between what happens in CLIL learning and Vygotsky's idea of zones of proximal development where he discusses potential development under adult guidance or with peers (cf. Vygotsky, 1978). A short description of the idea runs as follows: "what a child can do with assistance today she will be able to do by herself tomorrow" (Vygotsky, 1978, p. 87). This distance between what a child potentially can do and what it already can do, is the zone of proximal development. In CLIL classes, children of all ages easily and rapidly understand what is going on if the instructions are in the target language, i.e. passive knowledge so to speak. It takes a while before they can actually express themselves in the target language and this difference is very similar to Vygotsky's concept.

In summary, we can state that learning in a CLIL context is a different kind of learning than in a traditional (language) class. It is a much more challenging way of learning in an implicit way and, as a result, pupils are much more cognitively stimulated as can be seen from neuroscientific studies. At the same time CLIL is an answer to the desire for educational change that has been around for quite some time. This educational change pertains to the learning process itself and as we will see in the next paragraphs this kind of change has a number of unexpected side effects.

#### **4. Some unexpected side effects of CLIL**

There are two kinds of side effects we want to draw attention to. The first has to do with organizational matters and the school and the second has to do with learning processes.

##### ***4.1. Side effects of CLIL related to the school organization***

Any school that turns itself into a CLIL school faces a number of changes that affect the whole entourage. Although, on the surface, the change itself seems very limited and innocent the change is radical. A number of hours is taught and learned in an additional language and all the protagonists will be affected. Pupils, teachers, the school itself, the curriculum and the parents as well as local, regional or national politics - as the case may be - will have to respond to a new situation.

The school has to prepare itself for some turbulent times. It needs to communicate about CLIL and this often means to eliminate concern especially from parents and teachers alike. As we saw in the beginning of this contribution fear is an important factor: fear that the results will suffer, fear that the child will be incapable of following such a curriculum, fear from all kind of irrational feelings... Some teachers, especially, language teachers might even fear that their job is in jeopardy, other might fear not to be competent to teach in another language. The school has to show strong and capable leadership in order to prepare the transition from a traditional to a CLIL school.

Schools can refer to a number of arguments to back up the decision to introduce CLIL. One of these arguments is internationalization and the importance of being able to speak foreign languages fluently. Other arguments include education innovation and rather poor results in language proficiency in traditional classes. Our experience shows that, in general, once a school has made the decision, it is willing to accept and deal with the consequences engendered by that decision. However, we feel that even more deep side effects should be taken into account as well.

#### 4.2 Side effects of CLIL related to reading and dyslexia

Through the CLIL approach research has been stimulated in a particular way. One of these new paths has been, as we saw, the interest in the learning processes itself. Another point of interest has been the interest in proficiency development, particularly in reading processes. Some years ago we were asked by a French-speaking primary CLIL school about which language to use first for reading: the mother tongue, in this case French or the target language, Dutch. We were aware that in Europe at least two kinds of languages can be distinguished: opaque ones, such as English, French and Portuguese and more transparent ones, such as Spanish, Dutch or Greek (Goswami et al., 1998; Seymour et al., 2003). The difference lies in the transparency of the spelling: in English and French words can often contain many letters but there is no logical connection to the way they should be read and/or pronounced. The letter combination *gh* for example can be pronounced [f] as in *to laugh* or not at all as in *through*, [o] is pronounced [i] in women. This is confusing for beginning readers.

We compared two groups of readers, one learning how to read in the mother tongue, French, the other one learning how to read in the target language, Dutch. The results show that learners who started out in the opaque mother tongue, French, showed less good results than those who started out reading in the transparent target language, Dutch. This unexpected result was also confirmed by a parallel research carried out at the same time with the same combination of languages (see, Lecocq et al., 2009; Vandersmissen, 2010). The same result was obtained with other combinations of languages, French, Basque and Spanish (see Lallier et al., 2016).

Reading in a CLIL context shows to be a technique where ‘to crack the code’ seems more important than the emotional value that the mother tongue might have. Reading can be enhanced by first learning how to read in a transparent language and later on to pass on to a more opaque one, regardless of the mother tongue. There is yet another remarkable observation with respect to reading, this time involving dyslexia, where CLIL can learn us a great deal. Anecdotal observations indicate that in CLIL schools there are fewer pupils with dyslexia than in non-CLIL schools. Of course, this may be because the pupils have been preselected before being allowed to enter a CLIL school. But in Belgium no such selection procedures exist. Yet the number of dyslectic children seems less than average, i.e. - roughly estimated - between 5 and 12% of the population<sup>1</sup>.

Could it be that CLIL learning in one way or another has an influence on dyslexia? This is a fascinating hypothesis and one that is rather counter-intuitive as well, since most people believe that dyslectic children should not enroll in a bilingual programme (see Anton, 2004 for a different opinion). The hypothesis put forward here is warranted by two observations backed up by research.

In 2001 Nicolson and his team published a paper describing the case of a dyslectic girl that overcame dyslexia by doing equilibrium exercises on a balance board (see Nicolson et al., 2001). The authors concluded that the stimulation of the cerebellum and the subsequent connections that were made in the brain reinforcing the language zones significantly improved reading and writing performance. Activation of the cerebellum can yield positive results in dyslectic children with developmental motor problems namely with a deficient or ‘slow’ cerebellum. It is unclear whether other forms of dyslexia can profit for this.

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<sup>1</sup> Figures from [www.eda-info.eu/dyslexia-in-europe](http://www.eda-info.eu/dyslexia-in-europe)

In any case this is an interesting finding. The more so since a study by Matsumura and his team showed that implicit motor learning has a stimulating effect on the cerebellum (Matsumura et al., 2004). As we have seen CLIL offers implicit language learning. This is, of course, affecting the motor area in the brain and, according to Matsumura et al., also the cerebellum. If this is the case implicit learning builds a dam – so to speak - against dyslexia and this might explain why in CLIL schools fewer dyslexic children can be found. This hypothesis awaits confirmation or falsification but it is certainly an intriguing one.

## 5. Conclusion

CLIL is an answer to the desire for educational change. It is an interactive teaching approach that creates a meaningful environment in which the learner actively has to participate in the creation of knowledge on both content and language. Through language pedagogical techniques, such as scaffolding and translanguaging, both content and language learning are supported maximizing the learning effect. CLIL has also cognitive and neuroscientific implications particularly regarding brain organisation as can be seen, for instance in the study of reading. Because all this we can safely say that CLIL is an important driver towards innovative education.

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*Piet Van de Craen* ([pvdcaen@vub.ac.be](mailto:pvdcaen@vub.ac.be)) is Professor of Linguistics at the Vrije Universiteit Brussel (VUB). His main research interest is multilingual education and its effects. He is co-founder of a network of bilingual schools in Brussels (2001) and co-founder of the European Language Council (1997).

*Jill Surmont* ([jisurmont@vub.ac.be](mailto:jisurmont@vub.ac.be)) is Associate Professor at the Vrije Universiteit Brussel (VUB). Her doctoral dissertation (2015) examined CLIL and cognition in Belgian schools.

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