

Content and Language Integrated Learning (CLIL): state of the art in Europe and in Italy

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Abstract

The idea of a Content and Language Integrated Learning (CLIL) programme was born around 20 years ago across Europe to meet the expectations of our globalized world, in which people need to communicate effectively. The programme foresees an international and multiple-skills approach, bringing in students to learn non-linguistic subjects through a foreign language. Over the years, CLIL has increasingly attracted attention from educational bodies at the primary, secondary and higher level. As a consequence, the research community has started analyzing the improvement of qualitative and quantitative language learning, as well as the positive effects on learning subject content in the CLIL context. It is undeniable that the project is still in its infancy. Its ambitions challenge the tower of Babel, and it has potentials or limits that are often unclear to both teachers and students. This manuscript is an overview on the CLIL research activities implemented to date and summarizes how specific pedagogic, educational and even neuroscience research has evolved in the field. Different research approaches are described and recent results highlighted.

Introduction

CLIL is the acronym for Content and Language Integrated Learning, a term coined around 20 years ago to describe a situation where a foreign language is used as the medium for teaching non-linguistic subjects, aiming for students to reach proficiency in both the subject and language. In the current process of globalization, CLIL would offer the unique opportunity to any country of acquiring a second language, which is considered a priority aspect of economic growth. In particular, it gives the opportunity to non-native English speakers to acquire English through a natural approach.

Over the last few years, many European countries have shown growing interest in CLIL. Official European documents continuously focus on CLIL as an innovative and effective teaching and learning approach.

In particular, *The European Symposium on The Changing European Classroom - the Potential of Plurilingual Education*, held in March 2005, in cooperation with the Luxemburg Presidency, recalled "the need to ensure that all students receive CLIL provision at different levels of school education" (1). It was also emphasized that

teachers should receive special training in CLIL. During the same year, the EU published an in-depth study (2) into how CLIL is taking place in schools throughout Europe.

In addition, in the Recommendation 2006/962/EC of the European Parliament and of the Council of 18 December 2006 on key competences for Lifelong Learning [Official Journal L 394 of 30.12.2006], eight key competences are identified and the essential knowledge, skills and attitudes related to each of these are described. Among those key competences are:

- "communication in the mother tongue, which is the ability to express and interpret concepts, thoughts, feelings, facts and opinions in both oral and written form (listening, speaking, reading and writing) and to interact linguistically in an appropriate and creative way in a full range of societal and cultural contexts;"
- "communication in foreign languages, which involves, in addition to the main skill dimensions of communication in the mother tongue, mediation and intercultural understanding. The level of proficiency depends on several factors and the capacity for listening, speaking, reading and writing;"

- “learning to learn is related to learning, the ability to pursue and organize one’s own learning, either individually or in groups, in accordance with one’s own needs, and awareness of methods and opportunities.”

In complete agreement with the EU guidelines (1), CLIL should serve to “[build] intercultural knowledge and understanding; developing intercultural communication skills; improving language competence and oral communication skills; developing multilingual interests and attitudes; providing opportunities to study content through different perspectives; allowing learners more contact with the target language”. Moreover, CLIL is a convenient approach because it does not require extra teaching hours, complements other subjects rather than competes with them, diversifies methods and forms of classroom practice, increases learners’ motivation and confidence in both the language and the subject being taught.

It is indeed extremely important for students and all citizens to acquire multicultural skills. Intercultural skills include the ability to understand different

cultural contexts and viewpoints, demonstrating respect for others, and knowledge of a foreign language. Many students are leaving their formal education without any of these skills, according to global research published by the British Council (3).

The EU-Comenius programme has been supporting teacher training and partnerships between schools in different countries. A statistical overview relative to 2007-2012 of the Comenius programme is reported in (4). It shows that the interests of school professionals in all Comenius activities, especially in service training courses for teachers, are constantly growing. In addition, a Google search made year by year using either “CLIL”, “CLIL teaching” or “CLIL methodology” as keywords give the figures shown in Figure 1. Google searches were performed by selecting the appropriate timeframe in the Google toolbar (for example, 1 January 2012-31 December 2012 for the year 2012). The years 2010, 2011 and 2012 are particularly prolific, being the time when the Google results even double, going from one year to the next. These considerations give an immediate

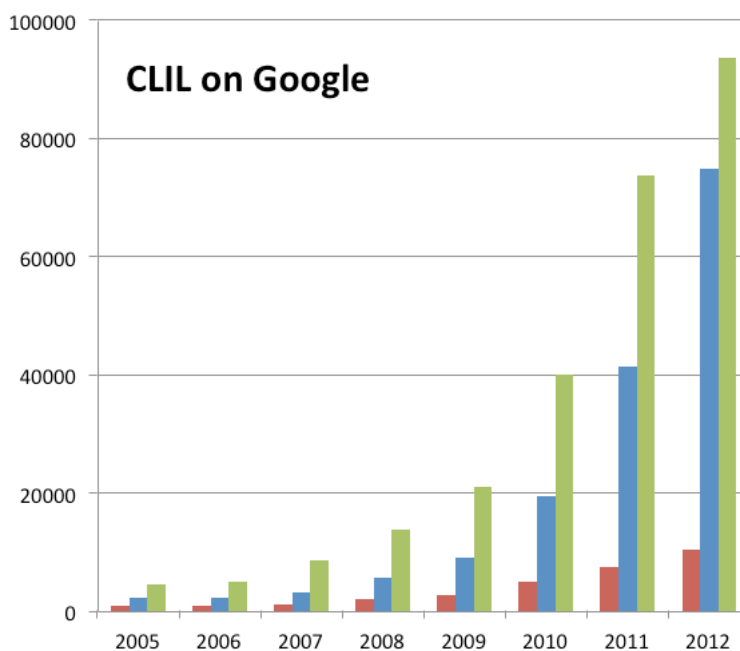


Figure 1. Number of Google search results about CLIL, divided by year. Red, blue and green bars refer to the Google search when the words “CLIL methodology”, “CLIL teaching” and “CLIL” are used, respectively, as keywords. The Google search is performed by selecting the appropriate time frame in the options toolbar (example: 1/1/2012-31/12/2012 when the Google-search is relative to the 2012).

idea of the feelings around the programme. They mirror the enthusiasm coming from families and students, as it may be perceived by all school professionals. Moreover, it is worth citing the recently born *International CLIL Research Journal*, which went live in 2008, as a sign of the research community's attention towards the CLIL approach.

The CLIL teacher aims to provide a knowledge of the subject equivalent to that gained in a similar native language course, alongside communicative competence sufficient to meet academic and professional goals in target language communities (Moschkovich, 2007; Noren, 2011). For this reason, CLIL is believed to have a powerful motivating potential for both teachers and students (Seikkula-Leino, 2007).

However, it is true that in many countries, measuring the impact and especially long-term effects of CLIL is premature. Yet where evaluation has been conducted on student performance, motivation and satisfaction, the results have proven to be very encouraging, as reported in (2).

In fact, many researchers expert on the pedagogic and educational area have committed to study and understand the effects of CLIL in the primary, secondary and higher education cycles (see for example Costa and Coleman, 2010; Infante et al., 2008; Ype et al., 2003). Doing research in the CLIL context means being supported by empirical evidence and this normally requires a time frame of at least a few years. The main idea underlying all CLIL research experiences is on one side, verifying the effectiveness of CLIL in the teaching-learning process, and on the other side, building effective teacher-training programmes.

The research instrument is normally entry and exit questionnaires for both teacher and students, tests for students, students' and teachers' journals, and statistical analysis. As a form of action research, this kind of research has the dual aim of contributing to theoretical knowledge and improving practice.

The CLIL approach crosslinks many areas of research, namely psychology, behavioral sciences, pedagogy, and sociology (see for example, Brooks

and Kempe, 2013; Carpenter and Mueller, 2013; Pavlenko, 2012; Pelli and Suchow, 2013; Wojcik EH., 2013; Wu X et al., 2013). Some studies done on the pedagogic and teaching aspects of this approach underline the intrinsically demanding nature of the project itself (see for example, Seikkula, 2007).

Content and Language Integrated Learning: Limitations and possibilities is a recent publication from Harrop (Harrop, 2012) where the challenges and the risks associated with CLIL implementation are analyzed. The author emphasizes that there is an urgent need to define what the cognitive advantages of the limited, yet enhanced communicative proficiency provided by CLIL, could be.

Launching a well-balanced and consistent CLIL involves a great deal of reflection, feedback analysis, and language teacher-subject teacher partnership. While research on the subject is in its infancy, growing attention from researchers at postdoctoral levels is evident and even necessary for the programme to succeed worldwide.

Research in the CLIL context

Europe is experiencing the arrival of CLIL and especially English is changing from a goal-oriented school subject to a medium of instruction for content subjects. Many research episodes have contributed to the growing interest on the CLIL context. Figure 2 reports what happens on the web between 2005 and 2012 when using "CLIL Research" as keyword for a Google search. Figures are relative to the primary and secondary school cycles, thus revealing a major interest of research towards the primary school until 2012. Most of the research is extremely recent and still ongoing, which makes delineate results and conclusions complicated. Moreover, the approach used by researchers is mainly based on statistics, which requires many years for the research to be accomplished and completed. Since CLIL is in its infancy, it is natural to ask why do a review on the CLIL research. There are two main reasons.

First of all there are some basic consideration that have been clearly delineate by researchers and a common idea of approach to be communicated.

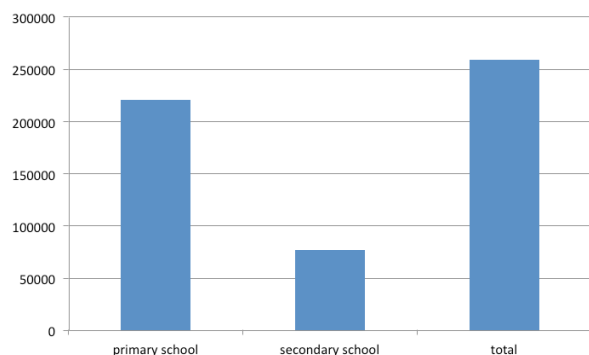


Figure 2. Number of Google-search results when either “CLIL research primary” or “CLIL research secondary” or just “CLIL research” are used as keywords.

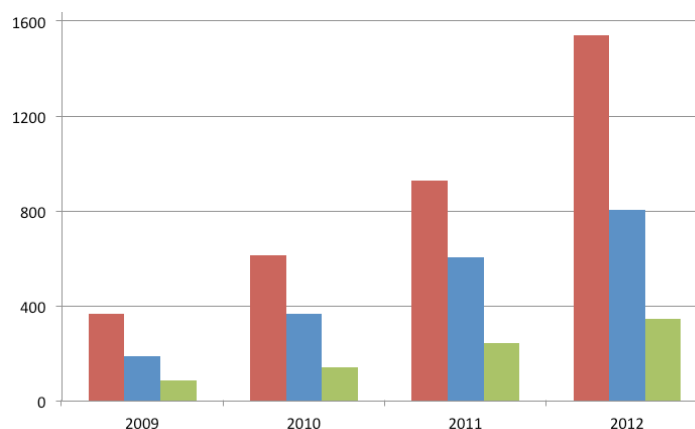
Secondly CLIL deserves further studies: it would be extremely important to gain an organic and systematic Europe-wide approach when using CLIL. In Italy, as an example, the CLIL approach is left to the initiative of the single schools rather than being centrally managed and controlled. Many European teachers are undertaking in-service training supported by the Longlife Learning Programme, Comenius scheme (4): nevertheless there is not, at the moment, a common well established CLIL practice. Each teacher acts on their own, experimenting best practice without a real knowledge of what has been done before. Therefore it is important to increase the visibility of the ongoing research efforts and of the research progress made in relation to the CLIL.

CLIL has been the subject of an increasing numbers of PhD theses, as shown in Figure 3. Postdoctoral researchers in the field of education, pedagogy, psychology and even neuroscience

have been involved in it. The outcomes of most CLIL programmes are positive, with CLIL students displaying higher level of proficiency and higher communicative competence than their non-CLIL peers. CLIL students largely outperform their non-CLIL peers in listening and reading comprehension, fluency and range of vocabulary, but less often so in pronunciation accuracy and complexity in written and spoken language (Harrop, 2012). Moreover research suggests that the profile of CLIL learners is similar to that of their historical predecessors, Canadian immersion students.

Most countries are interested in CLIL when a content subject is taught through English. This is obviously because it is extremely important for all non-English speakers to be able to communicate effectively in English. It is worth mentioning that the learners approach to a given subject may change depending on the language you would use as a medium for speaking. Just to make an example, the moon is feminine in Italian (*la luna*), masculine in German (*der Mond*) and indifferent in English. Meanwhile the sun is masculine in Italian (*il sole*), feminine in German (*die Sonne*) and indifferent in English. As a consequence, the mental attitude towards a given concept is influenced by the means of expression. From there the interest that the CLIL approach have risen also among neuroscience experts. In addition to that, it is worth recalling the outcomes of precedent studies that show, for example, efficiency in identifying a letter or a word is inversely proportional to complexity or word length (Pelli et al., 2003, Pelli et al., 2006). This makes some languages more suitable than others

Figure 3. Number of Google-search results about CLIL PhDs, divided by year. Red, blue and green bars refer to the keywords “CLIL PhD”, “CLIL PhD dissertation” and “CLIL PhD Thesis” respectively. The Google search is performed by selecting the appropriate time frame in the options toolbar (example: 1/1/2012-31/12/2012 when the Google-search is relative to 2012).



to be learned.

The recent European-wide research from (Nikula et al., 2013) focuses on research into classroom discourse. In order to unravel the complexities involved, three different takes on CLIL classroom discourse are discussed as an evidence-base for language learning, language use and social-interactive aspects, and processes of knowledge construction in and through a second or foreign language.

CLIL research experiences in Italy

With specific regard to Italy, Infante and colleagues (Infante et al., 2008), have reported the preliminary results of research developed in Italy at the primary level. The relevant content and results are reported in a PhD thesis. The authors stress that in Italy, there is not a centralized CLIL action, there is not any systematic monitoring of the CLIL initiatives, and CLIL is more widespread in secondary school than in primary school, at least with regard to autonomous initiatives of single schools. In fact, with the introduction of the law on school autonomy in Italy (n. 59/1997), Italian schools are allowed to create flexible CLIL modules autonomously. Despite this, Figure 2 shows that at least in terms of research, more progress has been made at the primary than at the secondary level.

The authors (Infante et al., 2008) monitored seven experimental primary school classes (4 grade) over two consecutive years where CLIL teaching and traditional language teaching were both present. They aimed to demonstrate that CLIL promotes more meaningful learning of foreign languages at both qualitative and quantitative levels, and that CLIL has a positive impact for learning subject content. The experimental and control classes were located in Milan Bergamo and Pavia (280 students), and the subjects involved were history, technology, art, and science. The instruments of research were questionnaires for teachers and students, tests, journals, and meetings.

The results highlighted the fundamental role played by the teachers in the CLIL context. The added value of CLIL was perceived by the sampled teachers, who thought that the methodological

innovations, the creation of a new context, and new practices helped them to become more flexible and improve their level of reflection.

In order to address the same research problem, Maffei and Favilli (Maffei and Favilli, 2012), from the University of Pisa, planned a teaching/learning sequence. They piloted a CLIL module in Upper Secondary Schools with a specific curriculum (liceo scientifico) where mathematics is an important subject. A group of mathematics and language teachers from these schools collaborated to design the classroom activities. In all the schools, the second language taught was English, so there was no possibility to use a different foreign language in the pilot project.

The critical issues they wanted to investigate, in order to study the impact of using English as an additional language to develop mathematical meanings, were the following: “how and to what extent can the introduction of an additional language in teaching/learning mathematics make students aware of the role played by the language, both as a representation tool and as a communication tool? How and to what extent can the introduction of an additional language in teaching/learning mathematics facilitate deeper understanding of concepts?”

They started analyzing an extract from the teacher’s interview so as to gather an overview of the classroom scenario. Some interesting points arose. For example, the teacher says that low-achievers in mathematics (as well as high-achievers/low-achievers in English) participated more actively than in the usual mathematics lesson; they stated: ‘the mathematics seems to be different to the students’.

In this context, I can contribute the preliminary experimental experience put in place in a high school in Verona. Sixty high school students were given the opportunity to take the Preliminary Scholastic Aptitude Test, prepared by the College Board, NY (www.collegeboard.com). The results obtained show that Italian students at high school level, who have never been taught through English-medium and who have studied English just as a

language subject, score very well when taking a standardized test in English. In addition, our analysis has shown that a relevant number of students, who are average-achievers in mathematics and English in the classroom context, outperform their peers when they have the opportunity to actually practice and use their English. They obtained higher scores than peers who had better high school cumulative grade averages.

In conclusion, even though Maffei and Favilli's (Maffei and Favilli, 2012) pilot project was very limited, the role played by the use of English in establishing the importance of mathematics language emerges from the students' comments. How and to what extent focusing on the language (when it is not a native one) can affect the conceptual view of mathematics needs further in-depth investigation. In the authors' view, "this concern requires the development of the analysis they began, namely how the communication is affected by the use of English in mathematics, how English serves as representing a mathematical situation and how language switching could be used as a complementary resource to teach/learn mathematics". In this perspective, further research is needed on meta-cognitive aspects, concerning the role of the teacher when CLIL is initiated and the change in classroom dynamics. In particular, it may arise that the mathematics teacher is no longer the only expert in the classroom, because of the possible presence of students with better language skills (as also often happens with technological skills).

CLIL and neuroscience

An interesting approach to the study of the mechanism underlying the CLIL teaching/learning process comes from Teresa Ting (Teresa Ting, 2010), who has studied to what extent CLIL and neuroscience are related, suggesting that there can be a very clear link between CLIL and what is known about how the brain processes information and learns. In particular, the author proposes that CLIL-Science at the upper-secondary level can go far beyond merely "content plus language", if it ventures beyond the confines of reading comprehension into a constructivist modality. A mini-lesson (on neurons) that adopts such a

modality is presented, demonstrating how scientific knowledge can be constructed through CLIL-based activities. Interpreted as a 50:50 content:language ratio in which "language" refers to that of the learner, CLIL can transform a classroom dynamic into one which is learner-centered, constructivist and motivating, as it prompts learners to use language authentically to access information, gain understanding and formulate new content knowledge. As children explore, inquire, ponder, and solve, so do learners in such CLIL classrooms. Interestingly the author concludes that "CLIL-Science provides a pragmatic means for changing classroom dynamics to overcome the lacuna of science-education: raising the status of teachers from "encyclopedia" to "Teachers" (capital "T") may better accommodate the edgy amygdala, encourage the contemplating pre-frontal cortex and even elicit the motivating median forebrain bundle in the brains of our Learners (capital "L")".

Conclusion

This paper reports an overview of the research that universities and schools have performed in relation to the European CLIL programme, as well as the main outcomes of the research. The majority of research reports generally positive outcomes of CLIL, even if some suggestions and limitations are highlighted (Harrop, 2012).

To conclude, CLIL is regarded as an innovative approach, whose potentiality and limitations have been analyzed, even if further data and broader research are still needed to have a complete picture. CLIL is implemented in a fragmentary way across Europe, with some countries more active than others in promoting and supporting schools and teachers. Much research is still ongoing; research results are very promising but still incomplete. The scientific community has reacted with growing interest in the programme, with many PhD students engaged in research in this field. The opportunity to learn a language in a natural way, using it rather than studying it, has shown to have interesting consequences in the attitude that students display towards school subjects, in particular mathematics. Teachers and students feel that they are collaborators towards a common goal, with teachers giving up their status

of “encyclopedia” and students gaining motivation as learners. For the future sake of research, the hope is that more schools and universities will engage to improve CLIL development.

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