



The linguistic impact of a CLIL Science programme: An analysis measuring relative gains



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ABSTRACT

The present study seeks to contribute new evidence regarding the linguistic progress achieved over one academic year by Content and Language Integrated Learning (CLIL) secondary education learners, enrolled in an English-medium Science course. It gauges the relative linguistic gains resulting from the CLIL programme in contrast with a formal instruction (FI) programme developed in the same school. Participants were followed longitudinally with a pre-test, post-test design. Tests used to elicit data were modelled on the type of tasks used both in FI and CLIL. They tapped into the productive and receptive skills of the learners. The sample included 2 groups of bilingual Catalan/Spanish participants, English being their L3 ($N = 50$ each). One group had FI plus CLIL in the Science course, (experimental group), the other had FI only (control group). Results obtained confirm that larger relative gains are obtained by the FI + CLIL programme, however not in all domains and to the same degree: relative higher gains accrue in reading, as expected, but not in listening. Similarly, their writing ability, and particularly so their accuracy, shows higher relative gains, and so do their lexico-grammatical abilities. In sum, in the CLIL programme analysed, reading and grammar seem to benefit the most.

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1. Introduction

The main goal of this classroom-based exploratory study is to analyse the linguistic progress achieved over one academic year by English as a Foreign Language (EFL) learners. In order to do so, we measure the relative amount of progress they achieve, with a primary focus on skill development. Participants are secondary education learners who, in addition to following conventional formal instruction (FI) in English since age 5, have been enrolled in an English-medium *Science* programme taught with a Content and Language Integrated Learning (CLIL) approach since age 10, that is, two years prior to the onset of the study. They are the GA: FI + CLIL group. We examine their progress over one year with respect to their level at the beginning of the year, between ages 13 and 14. Progress is measured in terms of the degree of relative proficiency gains accrued as a result of the FI + CLIL programme they have undergone. Their relative gains are then in turn contrasted with the relative gains obtained by another group, the GB: FI group, from the same school, who has followed a FI only programme. Age of onset and hours of instruction for the two groups are kept similar. Ultimately, this should allow us to gauge the effects of the FI + CLIL programme, and examine whether it yields differential relative linguistic gains in EFL written production,

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written and oral comprehension and lexico-grammatical abilities. With such a goal, Section 2 includes a brief appraisal of the background to CLIL programmes, subsequently, Section 3 describes the Science study, Section 4 presents its results, Section 5 discusses them, and, finally, conclusions are drawn in Section 6.

2. Literature review

CLIL has been defined as a new idiosyncratic development in modern European educational policies vis-à-vis languages, instruction, and European citizenship. The European motto defining it reading: 'United in diversity', the linguistic and cultural diversity of its 27 member states with 23 different languages (European Commission, 1995, 2005, 2007, 2008, 2012). In CLIL, a language different from the domestic language is used as the medium of instruction for curricular subjects at primary and secondary levels of education. Four interrelated features are intrinsic to such programmes in our belief: i) the fact that an additional or foreign language, for both the teachers and the learners, is used as the medium of instruction; ii) the fact that the culture of the classroom and the curriculum remains that of the L1, as do classroom communication practices (Johnson & Swain, 1997); iii) the international ethos which such an educational option confers to the classroom (see Author 1, 2015 for a detailed presentation of such a view); iv) the unsurprising fact that such programmes would not have been possible without a robust policy behind them, as already mentioned, something which underscores the fact that CLIL is an educational approach, not a simple 'methodology'. Other authors have identified somewhat similar sets of features, for example Lasagabaster and Sierra (2010), who refer to language of instruction, teachers, starting age, teaching materials, language objectives, inclusion of immigrants and research; a list which has subsequently been further qualified (Llinares, Morton, & Whittaker, 2013).

Undoubtedly, as a result of such a polifacetic nature and in spite of being still very much in its infancy (Eurydice, 2008), the European CLIL approach to education has already been on several agendas, as has previously been discussed (Author 1, 2013, 2007). Besides being on the political and the educational agenda, CLIL has also been on the social agenda, as many families at the end of the 1990s had pinned their hopes on another main tenet of the European policy vis-à-vis languages: the early introduction of foreign languages. Seeing it fail, certainly in contexts such as Spain (García Mayo & García Lecumberri, 2003; Muñoz, 2006), they placed their hopes in CLIL as a possible solution to poor standards in foreign languages. CLIL has also been on the research agenda, holding enormous potential for the field of Second Language Acquisition (SLA) research. Indeed it is proving to be nearly as prolific as the Canadian immersion programmes on which it was mirrored, particularly in its initial stages. The present monographic issue is a renewed effort to further contribute to such a raft of studies (see for example the volumes published only in Spain over half a decade: Abello-Contesse, Chandler, López-Giménez & Chacón-Beltran, 2013; Alcón & Michavila, 2012; Cenoz, 2009; Dafouz & Guerrini, 2009; Escobar Urmeneta, Evnitskaya, Moore, & Patino, 2011; Lasagabaster & Ruiz de Zarobe, 2010; Llinares et al., 2013; Lorenzo, Casal, de Alba, & Moore, 2007; Ruiz de Zarobe & Jiménez Catalán, 2009; Ruiz de Zarobe, Sierra, & Gallardo del Puerto, 2011), with the remaining countries in Europe not falling short of publications either, such as those from Austria (Ackerl, 2007; Dalton-Puffer, 2007, 2008, 2011); Belgium (Van de Craen, Ceuleers, Mondt & Allain, 2008) Finland (Nikula, 2007), Germany (Zydatiss, 2007, 2012); the Netherlands (Admiraal, Westhoff, & de Bot, 2006); Norway (Hellekjær, 2010); Sweden (Sylvén, 2004), to name but a few.

If we now turn to a quick overview of the existing consensus on the linguistic benefits of CLIL, general results seem to be by and large positive, although there are aspects which are either unaffected by CLIL or for which research is inexistent or inconclusive, namely syntax, productive vocabulary, written accuracy, discourse skills and pragmatic efficiency (although see Llinares et al. 2013; Whittaker & Llinares, 2009), and pronunciation, that is, degree of foreign accent. Such a positive impact has generally been attributed to higher quantity and quality of exposure. However, methodological issues are still unresolved in CLIL research and subject to debate, a debate to which this article seeks to contribute, as several key variables affecting such positive results remain by and large somewhat underexplored (Author 1, 2013; Muñoz, 2012, 2015).

Focussing specifically on the skills examined in this study, that is writing, reading, listening and lexico-grammatical abilities, Ruiz de Zarobe et al. (2011) summarized mixed results in the literature, with fluency and complexity improving, but not accuracy and discourse (Dalton-Puffer, 2011; Escobar, 2004; Lasagabaster, 2008; Moore, 2009; Ruiz de Zarobe, 2008; Zydatiss, 2007). Whittaker and Llinares (2009) also attested good results in writing. Ruiz de Zarobe (2008) emphasized the potential contrasting CLIL versus non-CLIL effects on reading, which are also rather evident with respect to listening in a positive direction for CLIL (Lasagabaster, 2008). Of special interest for our data is the study by Victori and Vallbona (2008), whose CLIL 6th graders were specifically better at listening, measured by means of a dictation task. Receptive vocabulary also seems to clearly improve (Jexenflicker & Dalton-Puffer, 2010; Zydatiss, 2007). This is not the case for lexis-grammatical abilities regarding some morphological phenomena, such as the use of null subjects, negation and suppletive forms (Martínez Adrián & Gutiérrez Mangado, 2009) which are not reported to improve, while, in contrast, sentence complexity and affixal inflection do seem to improve with CLIL (Dalton-Puffer, 2007), as does morphosyntax (Lazaro Ibarrola & García Mayo, 2012).

Against such a mixed-findings backdrop, the current article aims at providing new empirical evidence with a study adopting a pretest posttest design, in which an experimental group is measured against a control group, both matched regarding number of hours of exposure. This should allow us to address the following research question:

Will the GA group experiencing a FI + CLIL Science programme at secondary education level obtain higher relative linguistic gains over one year than the GB group which experiences FI only, when hours of instruction are matched?

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