



# The effect of content and language integrated learning on students' English and history competences – Killing two birds with one stone?



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## ABSTRACT

By failing to appropriately control for selection effects, most previous research has overestimated the effects of Content and Language Integrated Learning (CLIL) on the development of students' foreign language skills. Furthermore, the CLIL-effect on the content subject is still widely unknown. Therefore, the present study investigated skill development of 1806 German CLIL and non-CLIL eighth-graders in English and History controlling for a wide range of student, classroom and teacher characteristics. Results of multilevel modelling confirmed that CLIL-classrooms showed greater increases in English listening comprehension but not general English skills as measured by a C-test than non-CLIL-classrooms. In History, the increases in subject knowledge over one school year were comparable despite CLIL-students' larger amount of instruction (three instead of two hours per week). The results confirm previous, differential findings for English. For the content subject, they indicate that CLIL-classrooms need to invest substantially more time to achieve comparable learning outcomes.

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## 1. Introduction

Content and Language Integrated Learning (CLIL) has spread across Europe in the last two decades and is steadily gaining popularity (Pérez-Cañado, 2012). In CLIL the mother tongue and a foreign language are used within the same lesson to foster both content and language learning (Eurydice, 2006). The officially assigned CLIL-teaching time differs between countries but typically amounts to one or two bilingually taught content subjects (Eurydice, 2006). Thus, regarding the amount of foreign language input, CLIL differs substantially from programmes such as immersion in which 50%–100% of subjects are solely taught in the foreign language, beginning as early as kindergarten (early immersion) or

secondary school (late immersion) (Baker, 2006).

Previous CLIL-studies have shown that students' foreign language skills benefitted from CLIL (Köller, Leucht, & Pant, 2012; Nold, Hartig, Hinz, & Rossa, 2008) but the effects of CLIL on achievement in the content subject remain unclear. Furthermore, criticism of CLIL research has been intensifying in recent years (Pérez-Cañado, 2012; Rumlich, 2014a) arguing that CLIL-programmes cause selection effects that favour CLIL-students and that these have not been appropriately dealt with in previous, mainly cross-sectional research. Moreover, when interpreting CLIL-effects, the amount of teaching time needs to be considered since CLIL-classrooms usually receive more lessons in the content subject. Pérez-Cañado (2012) concluded that there is a "need of solid empirical research which builds in rigorous assessment of the variables under scrutiny [...] to determine whether the gains observed are truly ascribable to CLIL practice" (p. 330). Therefore, the present study compared CLIL- and non-CLIL-students' learning gains in English and History in a large German sample, controlling for potential selection effects of CLIL-programmes regarding students' prior achievement, general abilities, motivation, demographics, classroom composition, quality of instruction, and – for the analyses on History achievement – for History teacher characteristics.

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## 2. Theoretical background for CLIL-effects on language and content learning

Several second language acquisition theories support the expectation of positive CLIL-effects on students' foreign language skills. The input hypothesis (Krashen, 1985) and interaction approach (Gass & Mackey, 2007) suggest that language is acquired through a sufficient amount of comprehensible input and opportunities to interact with the language by producing and receiving feedback on it. CLIL-classrooms provide plenty of such opportunities: the amount of foreign language input is substantially increased in CLIL-classrooms compared to regular English learners' and students are encouraged (yet not forced) to use the foreign language in CLIL (Eurydice, 2006). The natural approach (Krashen & Terrell, 2000) suggests that a foreign language can be most effectively learned when the acquisition process occurs under conditions that resemble mother tongue acquisition. This is given in the CLIL-classroom due to its predominant focus on meaning instead of on form (Zydati, 2007), the opportunity to voluntarily produce the foreign language, and its high level of authenticity: topics are predefined by the content subjects' curricula and the foreign language simply serves as a means to communicate (Surmont, Craen, Struys, & Somers, 2014). Considering these approaches, it can be deduced that CLIL-students' receptive English skills (listening, reading) should particularly profit from CLIL, due to the high exposure to oral and written input (supports receptive skills; Krashen, 1985). Since student output (production of language) is encouraged but usually not forced, their productive skills (speaking, writing) might benefit to a smaller extent, too (Krashen & Terrell, 2000).

For historical content learning, positive CLIL-effects are suggested, too. Heine (2010) argued that CLIL might foster a deeper level of processing semantic information because students are exposed to language-related conceptual differences. These differences, e.g. in technical terms such as "night of the broken glasses" vs. "Reichskristallnacht", can trigger additional semantic language learning and, thus, deepen content knowledge understanding. Similarly, Surmont et al. (2014) suggested that CLIL-students possess raised metalinguistic capabilities triggered by the usage of two languages which lead to a better understanding of abstract concepts. Similarly, Cummins' interdependence (1984) hypothesis focuses on positive cross-language effects between the first and second language (Gebauer, Zaunbauer, & Mller, 2013), but it has also been used – in combination with Cummins' (1979) threshold hypothesis – as a theoretical framework to understand positive effects of early immersion on content learning (Zaunbauer & Mller, 2007). At very high ability levels in the second language, one might even turn to research on the positive cognitive effects (e.g., better executive control) of bilingualism (Adesope, Lavin, Thompson, & Ungerleider, 2010). Since research in these more extreme cases of foreign language acquisition resp. bilingualism indicates positive effects on content learning the same might apply to CLIL, too. Finally, related to the input hypothesis of language learning, the amount of time invested in the subject, a prominent variable in psychological theories of learning (Carroll, 1989), also favours CLIL-programmes. Most schools with a CLIL-programme provide CLIL-classrooms with an increased weekly number of lessons. In the German region in which the present study was conducted, CLIL-students attend three weekly History lessons instead of the regular two; i.e., 50% more than their non-CLIL-peers. By contrast, the number of weekly English lessons is the same at this grade level.

## 3. Selection bias in CLIL-programmes

Educational effectiveness research theoretically argues and empirically shows that learning is most strongly influenced by students' characteristics, such as prior achievement, general cognitive abilities, motivation, or demographic factors, followed by classroom factors, i.e., instructional quality or classroom composition (Opdenakker, VanDamme, DeFraine, VanLandeghem, & Onghena, 2002). Due to selection mechanisms in CLIL-programmes both student- and classroom-level factors might systematically differ between CLIL- and non-CLIL-classrooms and therefore confound the CLIL-effect.

In Germany, participation in CLIL-programmes is typically optional. Interested students and their parents apply to secondary schools with a CLIL-programme. CLIL-students are provided with extra English instruction in Grades 5 and 6 and from Grade 7, they receive CLIL-instruction in at least one content subject. The extra English lessons stop after Grade 6. In the typical situation of a surplus of applications, schools usually select appropriate students based on their perception of likeliness to succeed in CLIL (Zydati, 2007). Due to both self-selection of applicants and the schools' selection, CLIL-students are likely to possess higher prior knowledge in English and other subjects, higher general cognitive abilities, higher motivation, and a more favourable family background – all of them important prerequisites for learning (Wang, Haertel, & Walberg, 1993). Some of these selection effects of CLIL have already been confirmed empirically (Kller et al., 2012; Rumlich, 2014a).

Due to their positive student intake, classroom composition also benefits CLIL-classrooms. For example, the average test achievement and socioeconomic status of a classroom have repeatedly been shown to have an incremental effect on learning, independent of these variables' individual-level effects (Opdenakker et al., 2002). CLIL might also be selective with respect to teachers. Because of a lack of appropriate CLIL-material, CLIL-teachers need to invest far more time in preparing lessons than their non-CLIL-colleagues (Zydati, 2007). Therefore, Dalton-Puffer, Nikula, and Smit (2010) assumed that "CLIL-teachers are special in that they are willing to take on a considerable amount of extra work, which usually implies higher levels of motivation and pedagogical interest than teachers taken more generally" (p. 282). Thus, teacher enthusiasm (Kunter et al., 2013) and self-efficacy (Holzberger, Philipp, & Kunter, 2013) should be controlled for when estimating the effects of CLIL on content learning. Furthermore, since the effects of teacher competences on student learning are mediated by the quality of the instruction that they provide (Kunter et al., 2013), instructional quality should be considered, too. The same applies to quality of English instruction if high achieving CLIL-students are provided with especially competent English teachers. These classroom characteristics can only be appropriately controlled for by multilevel modelling.

While previous longitudinal studies on the effectiveness of CLIL have taken prior knowledge into account, other student characteristics, classroom composition, instructional quality, and teacher characteristics have not yet been considered comprehensively or not at all. This was overcome by the present study.

## 4. Previous research on CLIL-effects on English and content learning

Many cross-sectional studies have been conducted on CLIL-effects on students' English skills (Navs & Victori, 2010; San Isidro, 2010; Zydati, 2007). Since they could not appropriately control for selection effects we limit our discussion to the few longitudinal studies that have done this. Several studies about

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