

Linguistic Benefits of the CLIL Approach: Measuring Linguistic Competences

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Abstract

This empirical study compares two forms of language learning in Hungary by exploring English language achievement of CLIL secondary school students and those of non-CLIL intensive foreign language learners acting as a control group. The students took the same tests designed to measure conversational and academic language use (BICS and CALP). Data analyses prove that the social and academic language competence of the CLIL students is of a higher level than that of the control group. The CLIL students have significantly better skills in applying their broader lexical knowledge in various context-embedded conversational situations, as well as in taking into account grammar rules, text coherence and sociolinguistic context. In the case of cognitively more demanding academic language proficiency, the CLIL students do significantly better than the control group students with context deprived test problems which demand more subtle meanings, more sophisticated grammar and higher meta-linguistic awareness. The conclusion is that using English as a medium for learning various subjects is a more efficient route in providing functional language proficiency than traditional foreign language learning.

Keywords: communicative language competence, academic language competence, English learning, CLIL, bilingual education

Introduction

Mastering foreign languages, both in communicative and cognitive functions, has become a highly esteemed key competence in an integrated Europe. To provide better opportunities for learning languages, many countries, including Hungary, have established bilingual schools where some curricular subjects are taught through the medium of a foreign language (Eurydice, 2006). These schools use the CLIL approach. In CLIL, students learn language through the learning of content.

At the same time, to improve the quality of foreign language teaching / learning in traditional schools in Hungary, a large array of different language teaching programmes (e.g., intensive language preparatory year, intensive language classes, a favouring of communicative language teaching methods) have been introduced (Ministry of Education, 2003). It is expected that CLIL will create a linguistically more challenging environment resulting in improved language learning. However, there is little direct evidence in Hungary to support this hypothesis, hence the need for this study.

The article presents partial results of a larger scale empirical study on the level of the foreign language competence of students in Hungarian-English CLIL programmes (in Hungary referred to as bilingual schools) in comparison to that of students in mainstream enriched non-CLIL second language programmes (referred to in Hungary as intensive foreign language teaching). First the relevant factors of the bilingual schooling system are presented.

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The characteristics of the educational, linguistic and operational context of CLIL within the Hungarian bilingual educational model

When the first Hungarian-foreign dual language schools were established in the 1980s, the goal of bilingual education was very cautiously defined by law (Act No. I of 1985 on education). It aimed only to improve the foreign language knowledge of the students so that students in CLIL programmes achieved at least on par with students studying through their L1. However, today the expectations are much higher. Defined by the complex educational goals of the law of education (MKM Decree No. 26/1997. VII. 10.), bilingual schools are expected to produce ideal balanced bilinguals.

According to a widely accepted typology of bilingual educational models (Skutnabb-Kangas, 1984: 127), the Hungarian system, which at its introduction was called the "Hungarian experiment", is considered to be an adapted version of a kind of partial immersion programme (Duff, 1991; Skutnabb-Kangas, 1998). In the Hungarian interpretation, as Vámos (1993: 7) proposed, "education is bilingual if a student within it - either in a continually ascending system or examined at certain points of its studies - learns simultaneously in two languages. Accordingly, a school that provides such an education is called a bilingual or a dual language school". A similar meaning is accepted for bilingual education in Germany. Niemeier (1999: 166) states that "in sociolinguistic context, this term is certainly a misnomer because it refers to school subjects, like history, ...being taught in English. There the language is no longer the subject matter, but serves as a medium of instruction. Hence, there is no real bilingualism involved, given the fact that the classes are mostly held in one language only", which can be the mother tongue or the foreign language. In Hungary the term bilingual education refers to a similar form of provision where certain subject are taught through one language and others through another. From this point of view, when studying school subjects in a foreign language, the focus is on content, and the acquisition of the language is one of its positive outcomes (Niemeier 1999; Vámos, 2008). However, in an integrative approach, learning subject content through the medium of a foreign language (Bognár, 1999; Bognár, 2000; Genesee, 2001; Stoller, 2002) allows for language learning in an authentic and holistic way. Accordingly, "for a CLIL classroom, the assessment should concern both the content and the language" (Hofmannová *at al.*, 2008: 24).

Using two languages in the teaching-learning process presupposes that students will eventually be capable of using both languages for communicating effectively in context reduced and cognitively demanding contexts (Cummins 2000: 68). Obviously, in a monolingual context, learning one's mother tongue to a high degree of proficiency presents no greater difficulties in Hungary than in other primarily monolingual countries. In all schools (including the bilingual ones) Hungarian language and literature are major school subjects and in monolingual schools all the other subjects are taught via the mother tongue. In contrast, students face many additional challenges when a foreign language becomes the medium of instruction, mainly because the classroom is the primary target language domain. Code-mixing and code-switching are common. Here code-mixing has the meaning of 'borrowing' described by

Grosjean (1982), the replacement of an expression by one from the better mastered language due to incompetence (Hofmann, 1991). Whereas, code-switching, consists of “changes over phrases or sentences” and this seems “to be a more complex linguistic phenomenon also motivated by emotional, sociolinguistic and functional factors” (Navracsics, 2004: 140).

Experts on bilingual education have revealed strong relationship between the first and the second languages. The Developmental Interdependence hypothesis (Skutnabb-Kangas, 1984; Baker, 2002; Cummins, 2004) suggests that becoming functionally bilingual is influenced by the level of competency in the first language. Accordingly, when a first language has developed sufficiently to cope with decontextualized classroom learning, it enhances cognitive development, and also better supports second language learning. Regarding the relationship between the levels of the two languages, an important linguistic characteristic of Hungarian bilingual education is that students have already acquired their mother tongue at the expected age-appropriate (14-15 year old) level when they begin to use the second language as a medium of instruction. This provides “an additive situation: a second language is added at no cost to the first language” (Baker, 2002: 111), so in societal and individual contexts the reason for learning the second language is based on a desire to acquire additional second language skills. The second language is used for cognitively more demanding content learning only when students have reached an intermediate level (this is the medium level of the Hungarian State Certificate Exam, the requirements of which share elements in common with levels B1 and B2 of the CEFR). Students have studied the foreign language as a subject either in primary school for 4-6 years (3-5 classes a week) or in an intensive language preparatory year at the beginning of secondary school (16-18 language classes a week).

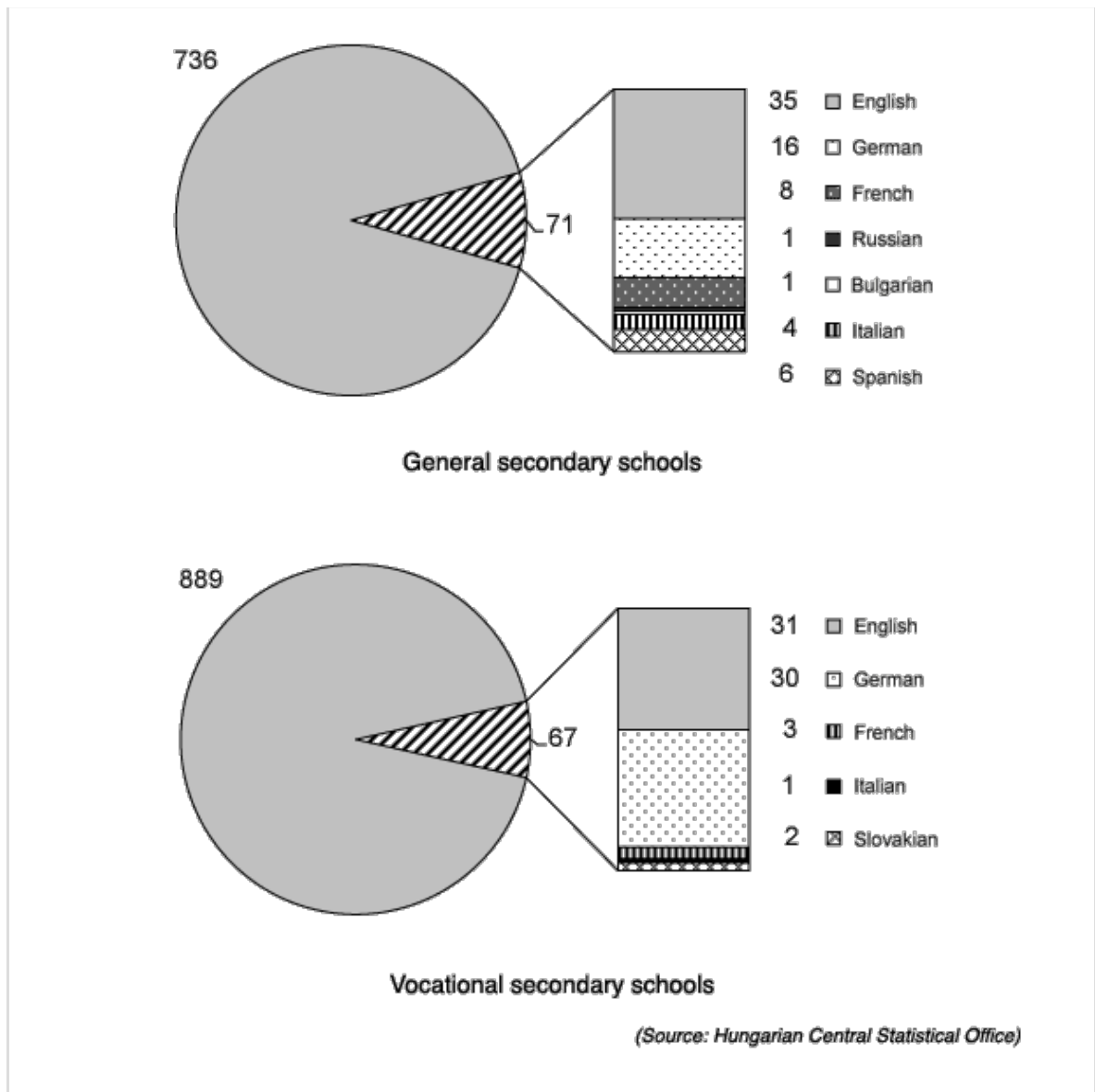
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Regarding linguistic prestige, the second language, especially English 'spoken worldwide', is also highly esteemed (Dörnyei, Csizér and Németh, 2006), so students have a positive attitude vis-à-vis both the first and the second languages. This contributes to the development of additive bilingualism (Cummins, 2000; Baker, 2002; Göncz, 2005) where foreign language knowledge combines with knowledge of the L1, having a positive impact on the further acquisition of both languages. Although most studies on the linguistic and cognitive effects of bilingual education were performed abroad (Falsgraf, 1998; Greene, 1998; Niemeier, 1999; Göncz, 2004; Keshavarz and Astaneh, 2004; Tinajero, 2005), a recent study on Hungarian bilingual education (Várkuti, 2009) has signalled the positive cognitive impact on the analogous thinking of students, and the positive linguistic outcomes of additive school bilingualism.

The Hungarian bilingual education programme rarely includes the entire student population of a school. It consists mainly of classes or groups within monolingual schools, in which at least three school subjects are taught in the target language. Each school has its own 'pedagogical programme' (this is the name of the main document based on which each school functions) and, thus, there is considerable diversity in the way the programme is implemented locally. For example, in the academic year 2006-07, in the last three years of bilingual secondary schools 33 subjects were taught in six target languages (Vámos, 2008). Although it is popular, bilingual education, as Figure 1 demonstrates, involves only about 9% of general and 7% of vocational secondary schools. Unfortunately, the bilingual education system shows some deficiencies, which include the lack of appropriate textbooks and teaching materials (supplementary books, maps, posters, video films, etc.), the lack of teachers who are fully qualified in both the content subjects and the target language, school management problems, etc. (Federmayer, 2002; Federmayer, 2005). Despite the difficulties, student achievement results are excellent as evidenced by school leaving exams (Vámos, 2007), state language exams, and national competitions in different school subjects (Neuwirth, 2003; Neuwirth and Horn, 2007).

Figure 1: Bilingual secondary schools in Hungary in 2006-07



The aim of the study, hypotheses

Many questions can be asked about learning in Hungarian bilingual education. Do students have the required target language competence for working and communicating successfully in the academically demanding classroom environment? Does the foreign language competence of CLIL students improve more than that of the non-CLIL mainstream intensive language learners? If this is the case, which areas of language use benefit the most? Generally, which of the two foreign language learning models is more efficient in accomplishing the desired linguistic goals (defined by the law of education)?

By measuring the foreign language competence of students with regard to their conversational and academic language use, the above questions can be answered which, in fact, is the aim of this research.

Based on previous knowledge, the following hypotheses were proposed:

- The English linguistic competence – both the communicative and the academic language use – of Hungarian-English CLIL secondary school students would be better than that of mainstream school students who study English within special intensive foreign language programmes.
- The English language competence of the CLIL high school students would be at a high enough level to allow English to be used as a medium of instruction.
- Taking into account that the learning of colloquial language is less demanding than the learning of academic language, the communicative competence in a cognitively less demanding conversational context would be on a higher level for both groups than would be the case in more cognitively demanding contexts.

The method and the population studied

The study is based on the data collected between December 2006 and March 2007 in a two-part English language competence test and a student questionnaire. The written test and the questionnaire were completed by the students in a 45 minute teaching class period. The evaluation of test achievement is based on the statistical analysis of the data (SPSS 13.0).

The theoretical framework of the language competence test was partly provided by foreign studies (Cummins, 1978; Skutnabb-Kangas, 1984; Cummins, 2003) on school bilingualism of immigrants and minorities which proposed that if a language other than the mother tongue is used in the process of teaching, the communicative language fluency Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP) should be differentiated. According to this distinction, the everyday, context-based conversational language, is acquired more quickly, however, this form of language is inadequate for meeting the cognitive and academic demands of the classroom. To be successful in the context-reduced, cognitively-demanding environment of the school, a higher level language competence is necessary. Academic language competence improves in accordance with the mental development of the individual (Göncz and Kodžopeljić 1991; Cummins, 2000; Göncz, 2006), and this form of language needs years to fully develop (Singleton, 1989; Hakuta *et al.*, 2000; Baker, 2002; Göncz, 2004). Although it strongly simplifies reality and has many limitations (Baker, 2002), this hypothetical distinction between social and academic language may be valuable in practice when linguistic competence is studied and measured, because specific language skills can be associated with both of these types of language. Context-based conversational proficiency is mainly based on pronunciation, vocabulary, and basic grammar, while academic language proficiency needs a more subtle comprehension of meanings and more sophisticated grammar connected to higher order cognitive processes, such as analysis, synthesis and evaluation (Skutnabb-Kangas, 1984; Baker, 2002; Baker, 2006). In CLIL, the use of a language other than the mother tongue in classroom instruction also involves BICS and CALP: a social language acquired more easily and quickly, and an academic language, which includes the expression of abstractions, and which takes more time and systematic effort to acquire. Success in Hungarian bilingual schools also depends on whether or not students sufficiently master the language in which they are studying. This similarity suggested the functional approach of this study in measuring conversational and academic language use.

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The two-part English language competence test created for this study was specifically designed in its first part to measure some of the communicative language skills, and in its second part some of the academic language skills. The test has been adapted to the linguistic requirements of the national curriculum of English language teaching (OM Decree No. 40/2002. V.24), and has been adjusted after pre-testing. The first part of the worksheet, the communicative test or Test I, includes five exercises of 44 items in all, which cover several different domains of conversational language use, and measure basic vocabulary and simple grammar needed in colloquial language use. General and integrated knowledge at a lower everyday level is required for solving these problems. Both language perception and production are measured by the exercises, and also some sociolinguistic competence. Considering the

testing techniques, some context is provided partly by illustrations, partly by written text. The second part of the worksheet called Test II, which also consists of 44 items, includes seven cognitively more demanding exercises. These measure a more sophisticated vocabulary in more or less context deprived situations (synonyms, antonyms, abstract nouns, less common expressions specific to English only and others) and complex grammar (e.g. the use of several tenses). The correct answers would require higher level lexical, semantic and syntactic knowledge and also some meta-linguistic awareness.

The CLIL high school students being tested are referred to as the *experimental group*. This group consists of 816 students from eight different Hungarian-English secondary school bilingual teaching units (schools, classes or groups) chosen randomly.

The major criterion in setting up the control group was to find students who are expected to meet the same high standards as the CLIL students. Therefore, the *control group* consists of 631 students from nine randomly chosen mainstream monolingual secondary schools that participate in various intensive English language programmes.

Both the CLIL and non-CLIL schools involved in the study follow the same central guidelines defined by the national curriculum (OM Decree No. 40/2002. V.24 on detailed requirements of high school graduation exam), but due to the different local pedagogical programmes (which precisely define the number of language classes per year, or which subjects should be taught in the foreign language and when etc.), they are not uniform.

In the experimental/CLIL group, the average number of teaching periods¹ for English as a foreign language (English as a subject) is 5.15 per week. In addition, this group receives at least three subjects in English.²

The control/non-CLIL group has on average 5.30 periods a week of English as a foreign language.

Before entering the high schools' CLIL or non-CLIL intensive foreign language programmes, students are selected based on an entrance examination. It is expected that they achieve at a level demonstrating at least basic English language knowledge (comparable to level A2 of the CEFR). Unfortunately this selection is not centralized, so there might be some differences between the standards of the different schools (regardless of the programme being applied to).

Both the CLIL and the non-CLIL programmes seek to prepare students to achieve a C1 level (CEFR) on school leaving examinations. However, they follow different approaches, thanks to which students of the experimental group have a richer exposure to language.

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Despite the diversity of schools, by comparing the results of the students of the two samples, the study can test the hypotheses and can show a numeric difference in the efficiency of the two models – CLIL and non-CLIL – in reaching the desired linguistic goals. For methodological reasons, the two samples were balanced according to those influential factors (other than school type) that were considered to be relevant in having an impact on target language learning, such as:

- age, the measure of which was the school year (all students were in grades 9-12, and the ratios of the different school years were equal in the experimental and the control groups)
- the socio-economic background of the students measured by the schooling of the parents (on a 5-point scale)
- the students' attitude toward learning (based on two factors: how satisfied the students are with their own school progress in all subjects, and what is the highest level of education the students plan to attain)
- the students' general academic achievement (measured by the students' average grades calculated from all the subject grades of the previous school term)
- the students' achievement in their English language classes (measured by their grades)
- the students' attitudes toward the English language as measured by how much the student prefers the language (indicated by the student on a 5-point scale).

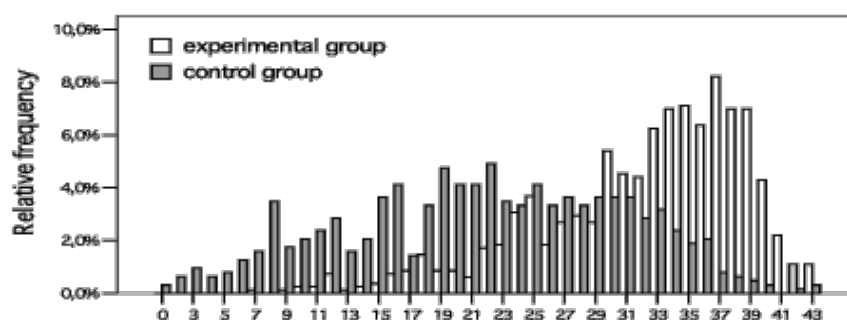
The data necessary for equalizing the two groups were collected in the student questionnaire. Since the two populations compared do not show statistically significant differences in the above variables, any difference in the language competences can likely be attributed to the fact that they are exposed to different language teaching/learning strategies (CLIL and non-CLIL).³

Results, analyses and discussions

1. Communicative linguistic competence

The mean of the test results for the CLIL experimental group was 32.15 points, and 21.67 points for the non-CLIL control group. Statistical analysis of the difference indicates that the communicative linguistic competence of the CLIL students is significantly better⁴ than that of the non-CLIL students. The graphic representation of the distribution of the points achieved (Figure 2) also demonstrates that the experimental group is less heterogeneous, and fewer numbers of low achievers appear among them. In the control group 22 points were achieved the most frequently, and only about 40% of the students obtained more points than that, while in the experimental group the mode was 37 points, and more than 88 % of the students obtained above 22 points.

Figure 2: The relative distribution of the points obtained on Test I

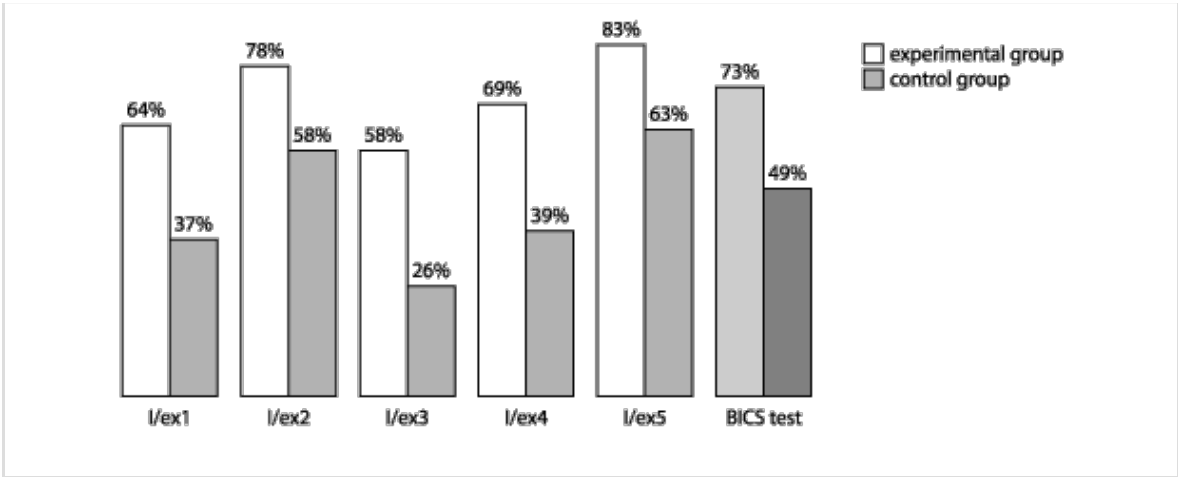


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In order to explore in which areas of second language use the students were more successful, the results of the five problems were analysed comparatively (Figure 3). The analysis reveals that the last exercise (I/ex5), in which the students had to complete an everyday conversation at the greengrocer's, was the easiest for both groups, and the most difficult was I/ex3, in which the meanings of some relatively frequently used English expressions had to be explained. Arranging the exercises into an order of increasing difficulty, we find the same order in both samples (ex5, ex2, ex4, ex1, and ex3), but the experimental group is significantly more successful⁵ in solving them by a mean of 24%.

Figure 3: The relative results on the exercises of the communicative test (Test I)

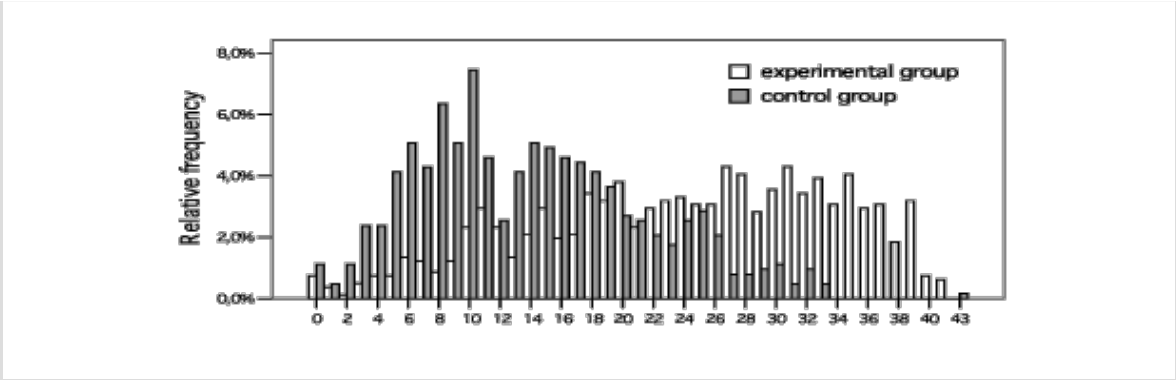


Detailed analyses proved that CLIL students master English in all the measured conversational areas at a higher level than the control students. Exercises I/ex1 (in which a letter had to be completed), I/ex2 (in which a ten-sentence story had to be written based on pictures) and I/ex3 (in which a semantic explanation of some expressions had to be given in English) have proved that students possess a larger social language vocabulary, more often correctly use basic grammar rules, and have the required skills to apply them more efficiently in producing correct sentences. A better recognition of text coherence helped students from the experimental group to be more successful in exercises I/ex4 and also in I/ex5. The students showed not only a better understanding and higher proficiency in producing conversational English, but also a higher degree of sociolinguistic awareness in using the language, especially in exercise I/ex5 when in responding to the sentences of the conversational partner.

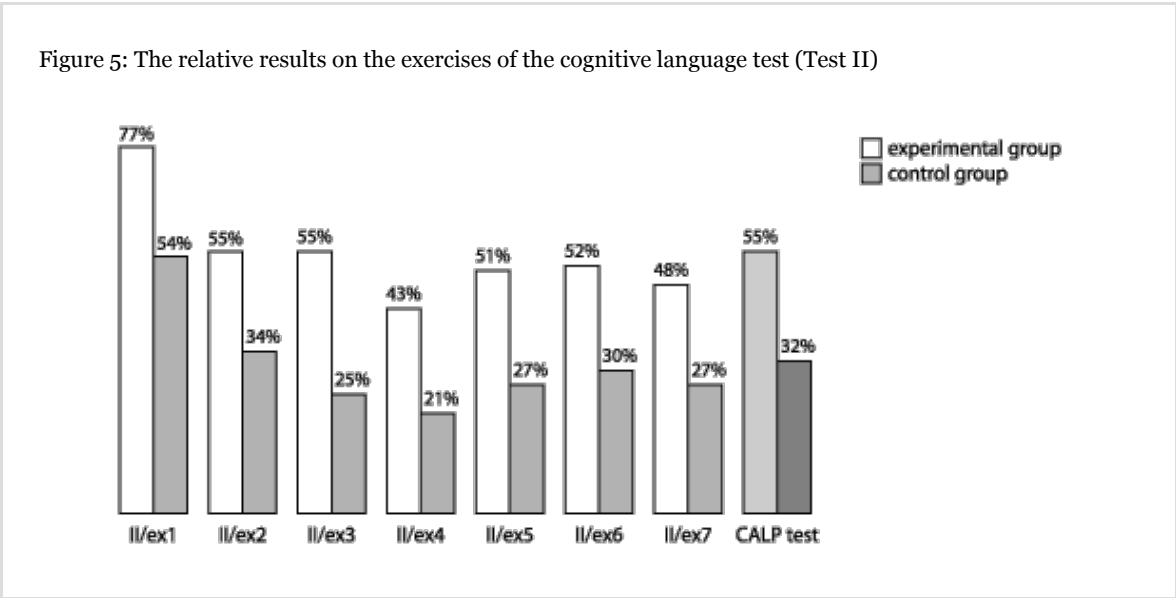
2. Academic linguistic competence

According to the comparative analysis of the cognitively more demanding academic language test results (the experimental group had 24.08 points, the control group 13.93 points), CLIL students performed significantly better.⁶ The distribution of the points earned (Figure 4) also demonstrates that the control group is more homogeneous in the academic linguistic achievement but at a much lower level (the mode is only 10 points). However, the experimental CLIL group showed greater heterogeneity in using English in the cognitive context determined by the test: it achieved better results. More than half (52%) of the CLIL students obtained 25 points or above, while in the control group only about 6.4%, and hardly anybody (except for two students with 43 points) achieved above 33 points.

Figure 4: The relative distribution of the points obtained on Test II



When examining the relative results in the seven different exercises, it was found that in all the measures, the experimental group was consequently more efficient than the control group by 21%-30% (on average by 23%), and the differences are statistically very significant.⁷ Since the exercises offered different areas of academic language use and measured language proficiency by various testing techniques, the results achieved on them (Figure 5) showed great differences within both samples, but the difficulties presented by the exercises follow a similar order, underlining that generally all students face similar difficulties when learning a foreign language, and this does not depend on either of the two approaches used in this study.



Both groups were the most successful in II/ex1, which is based on the correct usage of some verbs (*win, gain, earn, do*), suggesting that these are frequently applied and drilled during the English classes in both school types. The most difficult task for both groups was II/ex4, in which abstract nouns had to be created from the given words. This is probably because for most of the students the concept of an *abstract noun* was unfamiliar. Here knowledge about the language, meta-linguistic preparedness was helpful, similarly to II/ex2 (where synonyms had to be recognized), or II/ex3 (where opposites of the given expressions had to be recalled from the mental lexicon).

The test results proved that students who use English for learning subjects possess a larger active and passive lexicon

that includes less common words too, abstract concepts connected to language, and phrases and expressions specific to English only. They are also more successful in mobilizing these linguistic elements in the more or less decontextualized and abstract linguistic environment of the exercises, which require conscious thinking about the language rules applied. Results indicate that CLIL students were more effective at applying their English skills (including meta-linguistic awareness) in exercises requiring higher order, cognitively more demanding functions.

3. Comparing the two levels of the second language competence

The English competence (social and academic) of the CLIL group is altogether higher by 24% on average than that of the non-CLIL group. The histograms (Figure 6), which consider the major statistical measures, demonstrate that the performance of the experimental group is shifted toward the higher, while that of the control group toward the lower levels of linguistic competence. The comparative study of the two levels of English use indicates that the conversational proficiency in both groups reached higher levels than was the case for cognitively more demanding language (Figure 7).

Figure 6: The histograms of the joint results on the two linguistic competence tests (Test I and II)

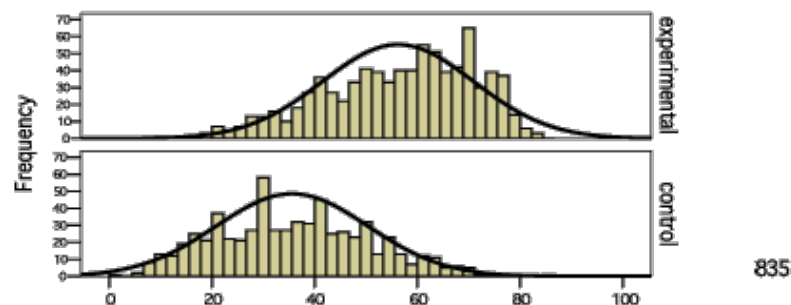
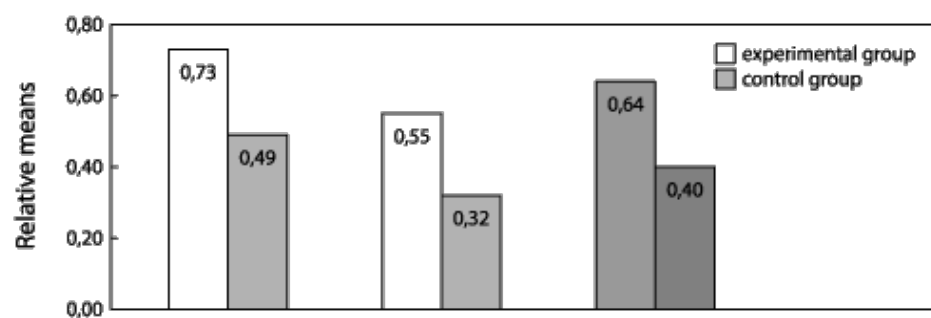


Figure 7: The relative means on the two tests and in the summary



Conclusions

1. The evaluation of the results of social and academic language tests revealed significantly great differences (24% on average) between the linguistic competences of bilingual school students, who are enrolled in the CLIL programme and those taking part in traditional intensive foreign language learning (non-CLIL) programmes. The hypotheses that CLIL students have a higher level of foreign language competence - both for social and for more cognitively demanding academic communication - were supported by the data. Although this result was expected due to the CLIL student's richer exposure to English, the study demonstrates a distinct numerical advantage for CLIL.
2. The result that the social language competence for both samples reached higher levels than was the case for academic language confirms other researchers' (Singleton, 1989; Hakuta *et al.*, 2000; Göncz, 2004) findings that it is easier to acquire social or conversational language than cognitively more demanding academic language. It also proves that both Hungary's CLIL and non-CLIL intensive language programmes are suitable for learning the language required for social communication.
3. After controlling for several factors such as previous achievement and socio-economic status both the CLIL and non-CLIL groups were considered comparable, and based on testing data, it can be concluded that the CLIL students who studied some of their non-linguistic content subjects through English performed better on cognitively demanding linguistic tests than non-CLIL students enrolled in an intensive foreign language class. CLIL students had a larger and more sophisticated vocabulary, better skills in applying grammar rules, as well as a greater confidence in and awareness of language use. Altogether they better mastered the foreign language and can be considered more functionally proficient in the language than non-CLIL students who study English intensively.

Considering that the aim of education is to provide functional foreign language knowledge, the findings of this research suggest that in largely monolingual societies the CLIL approach is a more effective means of language learning than intensive language programmes. By having CLIL students use the language in the cognitively highly demanding environment of subject classes they learn more language due to the meaningful nature of the communication than is the case in more traditional intensive foreign language teaching. Education policy needs to reflect this reality as it seeks to support new generations of learners in achieving high levels of competence in foreign languages, particularly in a European context where language knowledge is becoming a precondition for broad-based professional success.

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¹ 1 period is 45 minutes, generally called a class.

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² In schools of the experimental group six subjects (Mathematics, History, Geography, Physics, Biology, Computer Science) are taught in English, 3-4 in each school, in 2-4 periods a week, in different years, for a variable length (1-6 semesters).

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³ Although the CLIL students have greater in-school exposure to English, it is noteworthy that it would not be possible, due to other curriculum demands, for the non-CLIL students to undertake additional hours of English as a second language classes.

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⁴ According to the Independent Samples T test, equal variances are not assumed (in the Levene's test the value of $F=73.09$, its significance $p=0.000$), and the difference between the test results of the two samples is highly significant ($df=1134.506$, $t=24.545$, $p=0.000$), which indicates that the better result of the experimental group is not due to the chance effect, but due to their better knowledge at a level of confidence higher than 95%.

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⁵ The Independent Samples T test indicates significant difference between the results of the two samples, since in all the five exercises $p=0.000$. In exercise I/ex1 $df=1294.2$, $t=20.837$; in I/ex2 $df=1314.357$, $t=13642$; in I/ex3 $df=1429.08$, $t=24.916$; in I/ex4 $df=1445$, $t=17.489$, and in I/ex5 $df=1033.613$, $t=16.006$.

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⁶ The Independent Samples T test indicates that the difference between the test results of the two groups is significant ($t=22.524$, $df=1444.899$ and $p=0.000$).

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⁷ According to the Independent Samples T test of the results of the two groups, the differences are significant in all the exercises with $p=0.000$. In II/ex1 $t=18.31$, $df=1445$; in II/ex2 $t=13.23$, $df=1445$; in II/ex3 $t=20.415$, $df=1445$; in II/ex4 $t=13.985$, $df=1439.9$; in II/ex5 $t=17.04$, $df=1441.4$; in II/ex6 $t=12.84$, $df=1443.06$ and in II/ex7 $t=14.28$, $df=1443.75$.

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