

# Teacher Training for CLIL - Competences of a CLIL Teacher<sup>1</sup>

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*"I didn't know what to say until I said it." A ten year 1old child*

Content and Language Integrated Learning (CLIL) refers to teaching of non-linguistic subjects (e.g. mathematics) through an additional language (e.g. English) (Pavezi et al., 2001), (Using Languages, 2000). As the target group of our research are students involved in pre-service teacher education, the article deals with professional competences of the prospective CLIL teachers. Categories of barriers as stated in (Using Languages, 2000) form the basis of a research carried out with students of teacher education. They concern anxiety and affective barriers. However, we used different ranking of Rogers' categories and added some of our own related to both the study content and the broader aspects of the learning environment.

## Introduction

Europe of the past decades can be characterised by unprecedented interest among educational policy-makers in promoting new ways of teaching. In 1995, the European Commission's White Paper, *Teaching and learning - Towards the learning society*, stated that „upon completing initial training everyone should be proficient in two Community foreign languages.“ Content and Language Integrated Learning (CLIL) is an excellent way to contribute to this objective, often referred to as plurilingualism. CLIL is perceived as dual-focused education and the educationalists believe that it contributes to the enhancement of thinking processes. It is an innovative approach with holistic features. In some countries it attempts to overcome the restraints of traditional school curricula, and in future it could bring about a shift to curricular integration. (Novotná&Hofmannová, 2000).

## Research

Despite the growing interest in CLIL, only a modest amount of research relevant to the learning of mathematics through an additional language can be found in the literature. In this context CLIL lies on the boundary between research in mathematics education and applied linguistics. Barwell (2000) holds that linguistic research so far carried out has mainly focused on the acquisition of mathematical language. Research in *mathematics education* on the other hand, has generally sought quantitative relationships between language and attainment. It has either compared scores on a variety of English language proficiency instruments with scores on mathematical tests or aimed at comparing mathematical attainment between different language and culture groups. There seems to have been little research in either field which would investigate the qualitative aspects of the process of learning mathematics when English is an additional language (EAL).

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Where such research has taken place, it has examined the type of interaction between the two parties involved in the teaching-learning process. To conclude, as new trends are more prone to be accompanied with a number of myths that need to be dispelled, it is apparent that the topic of CLIL does not lie outside the domain of psychology research.

The work reported here tries to look into qualitative aspects of teacher education for CLIL. It focuses on the students enrolled in diploma courses of university, pre-service teacher education and attempts to tackle some of the problems associated with the introduction of CLIL that converge at the point of methodology criteria and professional competences of a newly qualified teacher.

### **Approaches to bilingual education**

Due to its practical nature and flexibility CLIL can be incorporated in many ways, with different subjects, languages, types of schools and learners of different age. For example, it might involve 8 year olds having 30 minutes of „language showers“ per week, in which they sing songs, play games in the other language and perform simple mathematical activities. Or it could involve 13 year olds learning as much as half or more of all their lessons in the other language.

Teaching and learning in an additional language has been implemented in a variety of ways throughout the world, e.g. Immersion programmes in Canada, International Schools, Reading programs for Chiapas children - Mexico 1973, The Redwood City Project - USA 1975, The Rock Point Experiment with Navajo Children - USA 1976, The Culver City Bilingual Program - USA 1976, The California Experiment – 1979.

In *Europe* over half of the countries with a minority/regional language community resort to partial immersion as the preferred way of teaching both the minority and the state language. In the 1970s, a number of central and eastern European countries established a parallel system of bilingual schools aimed at pupils exhibiting high attainment. During the 1990s this system was made available to all pupils in the general education system. In the same period, several European Union countries launched initiatives involving CLIL.

In the Czech Republic, CLIL for primary and lower secondary levels is just beginning. It is more developed at the upper secondary level.

### **Teacher training for CLIL**

For the past four semesters Charles University, Faculty of Education in Prague is piloting modules of the CLIL research project. The departments of Mathematics and English studies joined effort to run a special optional course which aims to give students involved in pre-service teacher education insight into both theoretical and practical aspects of CLIL, and to provide them with initial qualifications for CLIL. The course covers language and cultural preparation, classroom observations, microteaching of peers with the use of innovative teaching methods and approaches, and a variety of related activities.

One of the basic content issues is to specify *professional competences* of the CLIL teacher. What attitudes, what professional skills are to be acquired for the teaching of mathematics through the medium of the English language? Vygotsky (1986) views the teaching-learning process as sociocultural development, and describes the teacher's

support to the learners' zone of proximal development. This is executed through a number of professional skills, e.g. the skill to motivate, to establish and maintain contact, to control the learning process, to stimulate and activate etc. (Svec, 1998). The teacher competence in general seems to cover the subject knowledge and skills and their application. So far, Mathematics and English have been two independent disciplines, each having its specific characteristic features.

Whereas in an English class, communicative competence is the ultimate aim of teaching, and involves both accuracy and fluency, the main aim of mathematics teaching (Schoenfeld, 1994) is to develop mathematical thinking. To Vygotsky (1986), thinking involves the use of words and notions, speech is a tool to develop thinking. Learning mathematics, therefore also includes „appropriating ways of speaking mathematically, that is, learning the language of mathematicians“ (Zazkis, 2000). Unlike our everyday speech, formal mathematical language is characterised by lack of redundancy and refers to the standard use of terminology (mathematical register). In schools, and with young learners in particular, the mathematical language comprises both formal and informal components.

CLIL teachers should therefore have a good command of the target language and resort to the learners' mother tongue with care. For learners, however, code switching is a natural communication strategy, and teachers should allow it, particularly in the first stages of CLIL. Secondly, teachers' task in this field is to flexibly adapt their instructional support bearing in mind that in order to enable incidental language learning, i.e. language acquisition in the learners, their main concern should be to scaffold them on their way towards achieving mathematical competences. Learners, whose attention is focused on the non-linguistic content, need to have access to spontaneous speech, preferably in an interactive context.

Thus one of the conclusions, further supported by the experiences from schools where CLIL is already in operation, is that CLIL calls for an interactive teaching style. Verbal input should be accompanied with the use of visual and multimedia aids. Moreover, young learners should be given opportunities to promote holistic ways of learning and to learn from practical, hands-on experiences.

A wide range of cognitive and metacognitive processes are activated through CLIL. CLIL can have impact on conceptualisation. Being able to think about something in different languages can enrich our understanding of concepts, and help broaden our conceptual mapping resources (Using Languages, 2000). This might constitute another area of consideration for teacher trainees with a view of achieving the appropriate teacher competences. It needs to be said that CLIL is not intended to be an elitist form of education. In principle, all learners can benefit from CLIL irrespective of their cognitive abilities.

The teacher's task is to enable the students develop their individually different process of knowledge building and meaning construction as well as positive attitudes (DeCorte, 2000). It is a common belief that mathematics and languages are difficult subjects. Therefore, in order to help the learners succeed, it is of the utmost importance for the teacher to examine and analyse possible barriers that might have a negative impact on learning. The CLIL teacher should be able to suggest ways how these could be minimised and use a variety of effective teaching strategies that would help overcome individual learning difficulties.

The teacher qualified for CLIL may be more successful in overcoming the learning difficulties that have their origin either in the student's personality or the educational environment. There are two types of *inner barriers*: cognitive and affective. The barriers of the *cognitive* type are described mainly by cognitive psychologists, e.g. Bruner, Gagné. The newly acquired knowledge and skills are ranked into cognitive categories formed during the preceding learning experiences. If the new and old knowledge do not coincide, then the pre-knowledge acts either directly as a block in learning or it can result in creating misconcepts. Moreover, older learners may develop fears of uncertainty, e.g. rigid thinking. Hypothetical thinking may be underdeveloped and therefore students need unambiguous solutions.

*Affective barriers* in both young learners and adults are mainly those that originate in their personality (Rogers, 1996). Emotions are not always taken into consideration when dealing with learning or cognitive processes. In spite of that they are very likely to significantly influence the learning process both in a positive and a negative way. First of all it is anxiety manifested as the fear of failing, uncertainty of success and the fears of being ridiculed by the teachers or the peers. The student doubts about his/her abilities, his/her self-concept is negative ("I can't", "I am not able to"). The unwillingness to use non-traditional methods may create yet another block.

Another type of learning barriers are due to outside causes - personal worries, financial problems, tiredness or unfavourable circumstances of study. University students often state difficulties concerning the availability of study literature with obtaining literature, inconvenient time-table etc.

We tested the occurrence of the above mentioned affective blocks with students involved in pre-service CLIL teacher training course at Charles University, Faculty of Education. The control group were the practising teachers attending in-service methodology courses. We used the procedure of unfinished sentences. The most frequent statement was the *fear* of fulfilling the demands of study. We also found doubts concerning the *students' abilities for the study*. This could be interpreted as the negative self-concept. Students frequently mentioned the subject of memory. The problems with *attention* were either explicit ("I can't remember"), or implicit (e.g. the inability to start studying when necessary). Younger students often have difficulties with *motivation* and *time management*. Undoubtedly it is possible to speculate to which extent this is the indirect result of a barrier. Affective blocks are non-conscious and the learners only perceive difficulties in certain areas.

The above mentioned barriers (blocks) occur in each type of study. Some of them are increased through CLIL, others decreased. The increase can be expected mainly in those learners who are afraid of unusual, alternative learning methods and techniques. It is necessary to say that fears like this have not been found in either group of teacher trainees. It is possible that students who are enrolled in CLIL are more open. The decrease of barriers can be expected mainly in the area of fears of failing. The CLIL teacher is lead towards sensitivity to the learner's personality. Through the use of interactive, non-traditional methods s/he may succeed in altering the student's prior negative learning experience.

## Concluding remarks

Referring back to Vygotsky, the recommended competences of newly qualified CLIL teachers should comprise the following methodological criteria:

### **1. Support category: verbal - visual - metacognitive**

Dealing with content:

The CLIL teacher should show an understanding of the amount and type of content language s/he should use during the lesson, contextualise new content language items and present them in a comprehensible manner combining both auditory and visual stimuli. S/he should use a variety of techniques including gestures, mime or actions, visuals or realia, and genuine situations veering in mind that the instruction is carried out in an additional language. The CLIL teacher should speak clearly, break tasks down into their component parts and issue instructions for each part at a time. S/he should teach thinking skills and learning strategies and highlight new material using advance organisers etc. S/he should cluster content material whenever possible and frame it by relating it to past classroom or personal experience.

### **2. Support category: peer - affective**

Dealing with learners:

The CLIL teacher should be able to face the myth of the bilingual handicap and constantly strive to overcome possible barriers to learning. S/he should show an understanding of and sensitivity to individual learners' needs. S/he should involve learners as much as possible, build their interdependence in both content and language and encourage cooperative learning as peer support is equally important in CLIL. Teacher's praise, immediate feedback and reinforcement as well as further encouragement influence the CLIL process in a positive way and constitute means to overcome affective barriers.

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