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Motivation for the use of Content and Language Integrated Learning (CLIL) at the Slovak minority school in Hungary

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CLIL – Integrated teaching of minority languages and non-language subjects

The motivation for the implementation of CLIL – the integrated teaching of minority languages and non-language subjects – is the result of the European Commission's recommendations, particularly the Office of the Commissioner for Education and Culture. European Commissioner Ján Figel stated in 2006:

"Multilingualism is at the very heart of the European identity, since languages are a fundamental aspect of the cultural identity of every European. For this reason, multilingualism is referred to specifically – for the first time – in the brief of a Commissioner. I am honoured to be that Commissioner." (CLIL, 2006)

CLIL (Content and Language Integrated Learning) is an educational method for teaching non-language subjects in a minority language. It is an innovative approach that changes the ways in which students are introduced to the curriculum, and that accelerates the acquisition of basic communication skills in a minority language.

Project results and comparisons show that this way of learning accelerates and increases the quality of teaching in general – both academic and vocational subjects, as well as language training. CLIL strikes a balance between language and vocational training. A non-language subject is developed through a minority language, and the minority

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language by a non-language subject. The minority language is used as an educational tool, not only as the result of teaching.

The objective of this method of teaching is to improve the abilities and skills of students in the minority language by using the language as a tool of communication and not as a separate subject. CLIL can be considered as an educational method by which the EU promotes linguistic diversity, and has a positive impact on language learning.

The Origin and development of CLIL

The need for linguistic diversity in Europe began to appear as early as the 1950s. This is when the process of European integration began to take off. It was the integration and free movement of peoples that raised the issue of education and the active use of foreign or minority languages in practice. The teaching of foreign and minority languages has become an important part of the education system in many countries.

During the years 1970 and 1980, the development of this type of teaching was influenced primarily by the Canadian experiment. The first initiative came from English-speaking parents living in the province of Quebec, who considered it to be important to be proficient in French in a French-speaking environment. They understood that providing their children an education in this language led them to the acquisition of important language skills.

The integration of a minority language with non-language content into one whole seemed to be a suitable solution, which created a dual-focused education; education that was focused on the subject or topic as well as on the minority language. This educational approach has been known in different countries under different names – bilingual, dual focus, enhanced language learning, teaching through a foreign or minority language. In the mid-1990s, the European Commission in collaboration with expert groups accepted a single name with the acronym CLIL.

CLIL is an appropriate method for multilingualism – the EU's priority objectives in language learning. This approach to language learning is

increasingly gaining prominence in the contemporary educational practice of the EU.

Why CLIL?

This teaching method has several advantages within minority schools. At this point we would like to mention a few.

- When teaching with CLIL method, the focus is on the particular activity that is being taught and not the minority language itself.
- This approach provides the opportunity to learn to think in that language, and not only learn the language as such. CLIL allows students to practice the minority language when learning another subject.
- CLIL presents an opportunity for graduates to develop their skills using foreign or minority languages and therefore to increase their personal potential for an advantageous position in the labour market.
- The curriculum can be explained first in Hungarian and later extended to the Slovak language, or vice versa.
- The activities in both languages should be complementary.

CLIL has several beneficial consequences, including the following:

- an overall improvement in student communication skills in the minority language,
- a deeper awareness of the minority language, the official language and other languages,
- increased student motivation as a result of real educational situations in the teaching of minority languages,
- increased fluency of expression, and a wider range of vocabulary,
- active involvement in lessons,
- a positive attitude towards the minority language,

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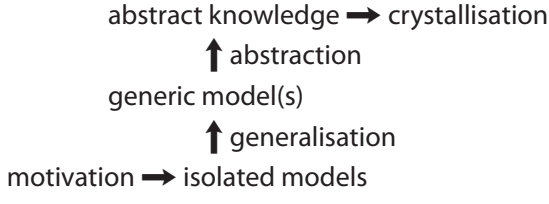
- development of their own national and cultural awareness,
- preparation for the practicalities of life and work in a multicultural society,
- CLIL provides opportunities that allow students to use a minority language naturally, in such a way that they gradually forget about the use of minority languages and focus only on content,
- in the CLIL method the minority language is associated with other objects. In the classroom there are two main goals: one is the subject and the other is the language,
- this is the reason why CLIL is sometimes referred to as dual-focused teaching,
- CLIL can achieve many different outcomes: it can increase the willingness and ability to learn both the minority language and the non-language subjects.

The process of gaining knowledge as a sequence of five stages

The model of the process of gaining knowledge is based on five stages (Hejný et al., 2006, p. 15). It starts with motivation and at its core are two mental lifts: the first leads from concrete knowledge to generic knowledge and the second from generic to abstract knowledge. The permanent part of the gaining of knowledge process is crystallisation, i.e. inserting new knowledge into the existing mathematical structure.

The whole process can be described by a scheme.



Motivation is the tension which occurs in a person's mind as a result of the discrepancy between the existing and desired states of knowledge. The discrepancy comes from the difference between "I do not know" and "I need to know", or "I cannot do that" and "I want to be able to do that"; and sometimes from other needs and discrepancies, too. For example, in the parking lot, there are two cars and three more will come, how many cars will there be?

Isolated models – models of a new piece of knowledge come into mind gradually and have a long-term perspective. For instance, the concepts of a fraction, a negative number, a straight line, congruency or a limit develop over many years at a preparatory level. For our example we can use concrete objects from real life, such as two yellow apples and three red apples, two chairs and three other chairs, and so on.

Generic model – the scheme of the process of gaining knowledge is placed over isolated models which indicate its greater universality. The generic model is created from the community of its isolated models and represents these models. For example fingers or bullets on a counter represent chairs, apples and other objects.

Abstract knowledge gives birth to abstract knowledge. It is a deeper view into that knowledge. New knowledge, relationships, concepts and dependencies between objects are defined and provide independence. A student at this stage is verifying the new knowledge produced by the used model.

Crystallisation is the phase, in which the pupil, after his entrance into the cognitive structure of a new piece of knowledge, begins to look for relationships with the existing knowledge. If the pupil understands, for example, that $2 + 3 = 5$, it is easy to ascertain through the models that $5 - 2 = 3$ or $5 - 3 = 2$.

Automation occurs after the above mentioned five phases. At this stage we try to calculate with the pupils without the models. The fact that a student answers quickly, correctly and with confidence does not imply that his/her answer is based on the appropriate image. For instance, the pupil knows that $2 \times 4 = 8$ but he/she cannot answer how much he/she has to pay for 2 lollypops each costing 4 crowns, or what 3×4 is without

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going back to the beginning of the 4 times table. His/her knowledge is burdened with formalism; by this we mean the characteristic feature of mechanical knowledge. In this case it is very important to use isolated and generic models. If the teacher finds in the pupil formalism or non-understanding of some notion, it is important to return to the isolated and generic models. Teachers often make the mistake of not using these models, and when they encounter pupils' problems they do not have the possibility of returning to these models.

The CLIL method in school mathematics

This method can also be applied to mathematics both in the preparation of future minority teachers of mathematics, and also in Slovak primary and secondary schools in Hungary. The existence of bilingual grammar also serves as an inspiration for new teaching methods that can be applied to the Slovak language in the educational process at a minority school in Hungary. According to Beardsmore (2008) the results of CLIL research show that monolingual students seemed to be stronger in their acquisition of knowledge of facts, whereas bilingual students were better at acquiring the mathematical operations. In other words, the research revealed a difference between informational knowledge and operational knowledge for the two groups of subjects. Informational knowledge refers to the capacity to memorise, or *knowing that*, whereas operational knowledge refers to the capacity to apply what one knows to new circumstances, or *knowing how*. Operational knowledge is important for creativity, whereas informational knowledge serves more as a tool upon which creativity must be built. The studies on the learning of mathematics in a bilingual context were confirmed amongst different school populations, both in primary and secondary education, and even amongst beginners in second language programmes.

The study Domínguez (2011) shows one example of using the CLIL method in mathematics when teaching with text tasks. This teaching was in English and Spanish:

Tu maestra de arte te dio 3 paquetes de papel construcción para que hagan banderitas de México. Un paquette es de hojas verdes, uno es de hojas blancas, y uno es de hojas rojas. ¿Cómo podrías hacer 60 banderas de México?	Your art teacher gave you 3 packages of construction paper to make the flags of Mexico. One package has green paper, one has writing paper and one has red paper. Each package has 25 sheets. How do you make 60 flags?

In our case, we tried to formulate some CLIL activities with future Slovak minority teachers at the Faculty of Education in Szarvas, Hungary. We used the figures prepared from tangram parts. First we analyze the tangram parts from a mathematical point of view, and we find their names in the Slovak and Hungarian languages, and later we try to formulate sentences in both languages.

Figure 1.

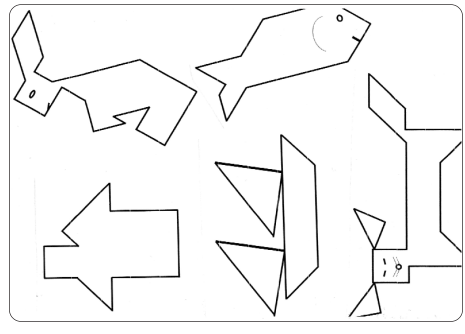

Table 1. Figures and tangram parts

Štvorec	Négyzet	Square
Trojuholník	Háromszög	Triangle
Rovnobežník	Paralelogramma	A rectangle
Rovnoramenný trojuholník	Egyenlő szárú háromzög	Isosceles triangle
Pravouhlý trojuholník	Derékszögű háromszög	Right triangle
Obdĺžnik	Téglalap	Rectangle
Dom	Ház	House
Komín	Kémény	Chimney
Pes	Kutya	Dog

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Table 2. Sentences

Zajac beží pred domom.	A nyúl fut a ház előtt.	The rabbit is running in front of the house.
Pes naháňa zajaca.	A kutya kergeti a nyuszit.	A dog is chasing a rabbit.
Ryby sú v akváriu.	A halak akváriumban vannak.	The fish are in the aquarium.

Figure 2.

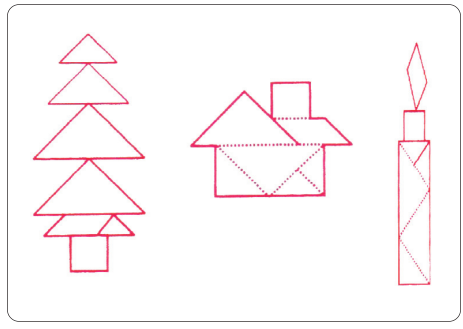

Table 3. Tangram figures

Dom	Ház	House
Komín	Kémény	Chimney
Strecha	Tető	Roof
Smrek	Fenyő	Spruce
Strom	Fa	Tree
Sviečka	Gyertya	Candle

Table 4. Sentences

Prasiatko vyšlo z domu a vyliezlo na vrchol stromu. Vlky ho nechytili.	A kis malac kiment a házból és felment a fenyő tetején. Farkasok nem csapták öt be.	The pig came out of the house and climbed to the top of the tree. The wolves did not catch him.
V dome svieti sviečka.	A házban ég a gyertya.	The candle shines in the house.

These activities support not only the building of mathematical notions by the students, but they provide the possibility of expressing their knowledge in the Slovak and Hungarian languages and to develop their communicative abilities.

Conclusions

According to Beardsmore (2008) bilingual children have at their disposal a greater faculty for creative thinking. They perform significantly better in tasks which do not require the finding of a single correct answer to a question, but instead where they are asked to imagine a number of possible correct answers: for example, giving the maximum number of interesting and unusual uses for a cup. The activities with future Slovak minority teachers can prepare them for bilingual work with pupils. Mathematics serves this purpose not only for Slovak language teaching, but also for developing pupils' activities. It is possible to find such suitable activities in Billich (2008), Krech (2009) and Uherčíková, Vankúš (2010). We finish with the ten commandments for a mathematics teacher according to Polya (1971).

The teacher should:

1. show an interest in the technical content of his teaching,
2. be well aware of the technical content of his teaching,
3. know his subject to the core and know that the best way for the teacher is the one that the teacher discovers himself,
4. know the expectations of students: What do they expect? What is difficult for them?,
5. not only to pass on his expertise to the students, but he should develop their working skills (such as the proper order and fairness of the procedure),
6. teach students to discuss the subject between themselves,
7. teach students to formulate arguments,
8. develop pupils' heuristic method for solving problems, show them general hidden structures in specific situations,

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9. not show students a solution ahead of each task, but the teacher should let the students themselves discover it; this will strengthen their thinking skills.
10. not force students with many theses contained in the curriculum, but to encourage and motivate them to learn with understanding.

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Abstract

Content and Language Integrated Learning (CLIL) can support the use of a minority language in different subjects. In our paper we present this method in the case of school mathematics. First, we describe the process of gaining knowledge in teaching mathematics. We will then present some students' work who will be future Slovak minority teachers.

Keywords: Content and Language Integrated Learning (CLIL), Slovak minority school, primary education, mathematics education