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**LEARNING CLIL THROUGH CLIL:
TEACHER STUDENTS' PERCEPTIONS OF THE PRACTICE AND
ITS EFFECTIVENESS**

Master's Thesis

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Abstract

Content and Language Integrated Learning (CLIL) is an innovative educational approach in which an additional language is used for the learning and teaching of both content and language. CLIL is gaining popularity in Europe because it is believed to significantly improve overall language competence in the target language, increase student motivation and foster learning of content subject. The current study followed an action research approach. For the purpose of the study the main elements of CLIL were described and the principles related to the elements outlined. The research examined the effectiveness of the CLIL principles in acquiring content knowledge about CLIL in the context of teacher education and explored teacher students' perceptions regarding the CLIL approach. The results showed that the principles applied in the CLIL lessons were effective regarding the acquisition of CLIL-related content and that the teacher students perceived the approach to be beneficial to the learning process.

Keywords: CLIL, principles, effectiveness, perceptions, teacher education

Lõimitud aine- ja keeleõpe: õpetajakoolituse üliõpilaste hinnangud meetodi kasutamise ja efektiivsuse kohta Resümee

Lõimitud aine- ja keeleõpe (LAK-õpe) on innovatiivne lähenemine õppimisele, kus õppija emakeelest erinevat keelt kasutatakse nii aine sisu kui ka keele õppimiseks ja õpetamiseks. LAK-õpe kogub populaarsust kogu Euroopas, kuna uuringud näitavad, et selle rakendamine parandab oluliselt õppijate sihtkeele oskust, suurendab õpimotivatsiooni ja soodustab ainekust arusaamist. Töö teoreetilises osas kirjeldati LAK-õppe elemente ja toodi välja elementidega seostuvad põhiprintsiibid. Töö empiirilises osas uuriti õpetajaks õppivate üliõpilaste hinnanguid LAK-õppe printsiipide kohta ja meetodi kasutamise efektiivsust LAK-õppe metoodikaalaste teadmiste omandamisel. Uurimisküsimustele vastuse leidmiseks kasutati tegevusuuringut. Uuringust selgus, et LAK-õppe rakendamine teema õpetamisel on efektiivne ja soodustab sellest arusaamist. Lisaks tuli uurimusest välja, et õpetajaks õppivad üliõpilased hindavad kõrgelt lõimitud aine- ja keeleõppes rakendatavate põhimõtete kasulikkust õppeprotsessile.

Märksõnad: LAK-õpe, põhimõtted, efektiivsus, hinnangud, õpetajakoolitus

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Introduction

Content and Language Integrated Learning (CLIL) is considered a major innovation in education. It is an educational approach that could be mutually beneficial for both content and language subjects. Moreover, it aims to increase learner motivation, develop learners' first language, cognitive skills and intercultural understanding. Because of this potential CLIL is gaining momentum and extending as an educational approach across continents (Eurydice, 2006).

CLIL has been promoted as a means of solving problems of traditional language learning, student motivation and overcrowded curriculum, but the driving forces for implementing CLIL programmes differ from country to country. CLIL is rooted in diverse socio-political developments involving wide ranging variables in different contexts. In Estonia, for example, CLIL has been used to further Estonian-medium studies in Russian-medium kindergartens and schools. However, currently there are no state-funded training programmes available for teachers of Estonian-medium schools.

The topic of the thesis stemmed from the author's interest in the concept of CLIL and her work experience as a teacher and teacher trainer. The overall rationale of the thesis is the need to develop new approaches in teacher education, which promote a better integration of both content and language learning. In the CLIL classroom the role of the teacher is twofold. They have to teach content and assist students in the learning of the additional language at the same time. Research shows that the process of integrating the two is not self-evident (Gajo, 2007).

According to Wolff (2012), teacher training is the most demanding area of the many complex issues related to CLIL. Coyle (2010) suggests that without appropriate teacher education programmes the full potential of CLIL is unlikely to be realised and the approach unsustainable. One has to admit that there has been growing interest regarding the areas of competence for CLIL teachers (Hansen-Pauly et al., 2009; Marsh, Mehisto, Wolff & Frigols, 2010; Wolff, 2012). The issue of how the competences should be developed has remained out of the focus, however. The current thesis aims to contribute to the discussion on CLIL and examine its potential as a form of instruction in teacher education.

In the theoretical part of the paper, the main elements of CLIL are described and the principles related to the elements outlined. The aim of the action research is to examine the effectiveness of applying these principles in acquiring CLIL-related content as well as to explore teacher students' perceptions regarding the CLIL approach. The results of the research are interpreted in the light of CLIL literature and the related research.

Defining Content and Language Integrated Learning

The term ‘Content and Language Integrated Learning’ (CLIL) is largely self-explanatory. The idea of dual focus is inherent in the term CLIL itself. However, there seems to be no general consensus amongst researchers about the scope, aims and principles of CLIL. As a result, there are a series of definitions in use highlighting different characteristics and intentions of the concept.

According to Marsh (2002) CLIL is an umbrella term adopted by the European Network of Administrators, Researchers and Practitioners (EUROCLIC) in the mid-1990s. Marsh defines CLIL as an approach which “encompasses any activity in which a foreign language is used as a tool in the learning of a non-language subject in which both language and the subject have a joint role” (p.58). He believes that a core reason why the term was increasingly adopted through the 1990s was that it considered both language and non-language content as equally important, without implying preference for one or the other. The viewpoint that in CLIL, there is a multiple and simultaneous focus on content and language is supported by many authors (Beardsmore, 2009; Coyle, 2007; Coyle, Hood & Marsh, 2010; Dalton-Puffer, 2007; Mehisto, 2008). However, as to the scope of the term opinions differ. Some researchers suggest that CLIL may share some elements with educational approaches such as immersion and bilingual education, yet there are some fundamental differences between the practices. According to Wolff (1998) CLIL is not bilingual/immersion education *per se* as it goes beyond what is often referred to as bilingual education. Coyle et. al (2010) argue that CLIL is not any kind of teaching and learning in another language. They emphasise that for CLIL to be effective certain principles must be recognized as essential. Coyle (2007) explains that for CLIL to be fully accepted in the pedagogic arena “it has to demonstrate rigorous theoretical underpinning, substantiated by evidence in terms of learning outcomes and capacity building” (p. 546).

In an often cited definition by the 2006 Eurydice Report, CLIL is defined as “a generic term to describe all types of provision in which a second language (a foreign, regional or minority language and/or another official state language) is used to teach certain subjects in the curriculum other than the language lessons themselves” (p. 8). There are other studies (Dalton-Puffer, 2007; Marsh, 2002) that limit the ‘content’ part in the definitions to the curricular subjects. Yet, in more recent studies ‘content’ is preferred to ‘subject’ in order to widen the choice of contextual variables (Coyle et al., 2010; Mehisto, Marsh & Frigols, 2008). It is suggested that whilst curricular subjects might be appropriate for some CLIL programmes, what exactly is meant by ‘content’ in CLIL depends on the context of the

learning situation. So, 'content' in a CLIL setting may in addition to a traditional curricular subject be a cross-curricular theme, a topical issue such as citizenship, local community or Olympic Games, etc.

In addition to content it is the language that defines CLIL. Although in some definitions the term 'foreign language' is used to refer to the target language of the CLIL classroom, the language in which content is taught is not always learners' foreign language. Also, phrases such as 'a language other than learners' mother tongue' and 'second language' are used interchangeably to refer to the languages used in different CLIL settings. Coyle et al. (2010) define CLIL as "a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language" (p. 1). They explain that the use of the phrase 'additional language' is intentional as it may mean learners' foreign language but it may also be a second language or some form of heritage language. Similarly to Coyle et al., Dalton-Puffer, Nikula and Smit (2010) combine the terms 'additional language' and 'content' to describe the nature of CLIL.

The integrative nature of CLIL provides an opportunity for taking not only a dual-focussed but a multiple-focussed approach. For example, the interrelationships of content, communication, culture and cognition are summarised in the 4Cs framework for CLIL (Coyle, 2007). Sudhoff (2010) suggests combining foreign language learning, content subject learning and intercultural learning. Mehisto et. al (2008) mention the CLIL triad and explain how language, content and learning skills are the three fundamental pillars of CLIL. However, content and language are the two central elements that all the researchers consider as paramount to the CLIL approach.

Aims and Rationale of CLIL

Historically the most common reason for introducing CLIL programmes has been improving learners' overall target language competence, whereas currently numerous goals linked to learning and development have emerged. Marsh (2002), for example, has identified four other major goals in addition to language development which are related to content, learning, culture and environment. Mehisto et al. (2008) emphasise the intercultural aspect of CLIL together with cognitive and content aims, adding the first language development to the other language goals. Moreover, many authors suggest that learners' motivation to learn content through the target language may foster motivation towards learning the language itself (Coyle, 2007; Lasagabaster & Sierra, 2009; Mehisto et al., 2008; Van de Craen, Mondt, Allain & Gao, 2007). Thus, CLIL promises big results for all its stakeholders. However, the

questions whether and to what extent CLIL can deliver these results remain of interest.

The expectations that the CLIL approach leads to better target language proficiency compared to traditional approaches has been clearly confirmed (Beardsmore, 2009; Dalton-Puffer, 2011; Ruiz de Zarobe, 2008; Van de Craen et al., 2007). The research results differ across various forms of language competencies and depend upon learners' age. However, the field where the difference between CLIL students and their peers is most noticeable is oral production (Lasagabaster, 2008; Ruiz de Zarobe, 2008). Thus, the often-cited argument that CLIL develops learners' oral communication skills is watertight. The reasons for this are, on the one hand, based on the notion that "extended exposure to meaningful and functional foreign-language input is crucial, although not sufficient prerequisite for foreign language acquisition" (de Graaff et al, 2007, p. 607). On the other hand, it is assumed that CLIL relies on the communicative language teaching principle (Coyle et al., 2010; Dalton-Puffer & Smit, 2007; Darn, 2006) and that integrating language and content provides students with a naturalistic learning environment where real communication is possible (Dalton-Puffer 2008; Maljers, Marsh & Wolff, 2007). Moreover, Dalton-Puffer and Smit (2007) suggest that due to the primacy of meaning over form students' anxiety to use the target language is reduced and therefore their motivation to communicate in the language is increased.

Several authors (Coyle et al., 2010; Darn, 2006; Mehisto et al., 2008) emphasise that CLIL not only aims at improving overall target language competence, but also is raising the awareness of both mother tongue and target language. Even so, the question whether the first language will develop normally if a significant amount of learning takes place in another language is occasionally put forward. According to Van de Craen et al. (2007), there is no evidence that CLIL might be an impediment to the development of the first language. Their research results from French-speaking Belgium indicate that despite the fact that the students received 75% of their instruction in Dutch they easily attained the final goals in French. In CLIL programmes typically, however, less than 50% of the curriculum is taught in the target language (Dalton-Puffer, 2011). Therefore one can only agree with Van de Craen et al. who suggest that fear for language loss is more often used as an argument against CLIL in language areas where a majority and a minority language compete.

While research has produced strong positive evidence in favour of greater target language proficiency, some other aims formulated in CLIL literature raise concerns. A question asked in many recent debates about CLIL is whether the additional language complicates the learning of content subject. Van de Craen et al. (2007) report that there are no indications that subject matter knowledge would be less good in CLIL classrooms than elsewhere. According

to Stohler (2006), there are neither positive nor negative consequences on the acquisition of knowledge. Gajo and Serra (2002), on the other hand, found in their research that overall the results were slightly more positive for the bilingual group, explaining that the strength of the bilingual group was operational knowledge, which refers to the ability to transfer and apply knowledge to new situations. Heine (2010) refers to the fact that CLIL learners are in their subject matter knowledge on a comparable level to learners from traditional classes as the CLIL paradox. In her research she looks into the question how learners compensate for the difficulties they experience in the foreign language setting. She surmises that CLIL learners compensate the lack of comprehension through context knowledge.

However important the linguistic and content-related aims of CLIL may be, they are only two of the several goals enumerated by CLIL experts. Lesser known, but an equally important goal of CLIL deals with issues of a socio-cultural nature. It is suggested that the content-related topics of CLIL classes can also provide opportunities for learners to develop intercultural understanding while gaining knowledge about other countries (Darn, 2006). Furthermore, CLIL is expected to build tolerance towards other linguistic and cultural groups, foster appreciation for human diversity and help learners to become global and responsible citizens (García, 2009). An argument frequently put forward in favour of CLIL is that its cultural dimension prepares students for international mobility and occupational demands. For example, de Graaff et al. (2007) point out that in the Netherlands the main goals for students intending to follow CLIL is firstly a better command of language, secondly preparation for a more international society, and thirdly preparation to study abroad. Similarly, according to Merisuo-Storm (2011) one of the three major goals of CLIL education in Finland is to prepare students for life in an internationalised society. Dalton-Puffer (2008), on the other hand, argues that the intercultural aspect of CLIL has played a much more important role in expert formulations of CLIL goals, “where language goals have been placed among but not over and above other kinds of goals” (p. 3). Coyle (2007) agrees that there is currently little research which explores the role of culture in CLIL. However, as the passage suggests, the cultural expectations of CLIL can only be of benefit for learners and also for society as a whole.

The development of learner motivation and positive attitudes is the key issue of all education. An important pro-CLIL argument concerns the purpose of language use in the classroom. Mehisto et al. (2008) explain that in CLIL classrooms learners can apply the just-learned knowledge and this hands-on approach is considered to strengthen their motivation. Similarly, Dalton-Puffer and Smit (2007) find that learning about subject knowledge in the CLIL classroom “gives the use of the foreign language a purpose over and beyond learning

the language itself” (p. 8). So, when learners are interested in a topic they will be motivated to acquire language to communicate (Darn, 2006, Mehisto et al., 2008). Moreover, if learners participate voluntarily in learning through the medium of an additional language, it can enhance overall motivation towards the subject (Coyle et al., 2010). It is also believed that the motivation of CLIL students is increased by the notion that it prepares them for their future studies and working life (Beardsmore, 2008; Darn 2006). Based on the arguments suggested by CLIL experts, one can conclude that CLIL increases learner motivation by adding purpose and meaning to the learning process.

Finally, there is the issue of advancing learners’ cognitive development. It is supposed that CLIL induces learners to be more cognitively active during the learning process (Coyle, 2007, 2010; Darn, 2006, Van de Craen, 2007). Darn (2006) suggests that educationally, CLIL complements individual learners’ range of learning strategies and adds diversity and flexibility to existing classroom practice. Coyle et al. (2010), however, claim that for CLIL learning to be effective, students must be cognitively engaged. They add that to raise achievement levels, learners have to be intellectually challenged in order to transform information and ideas, to solve problems, to gain understanding and to discover new meaning. So, CLIL has to take account of how to apply knowledge and skills through creative thinking, problem solving and cognitive challenge.

In sum, most of the expectations placed upon CLIL have been supported by research results or argumentative back-up. It is clear, however, that whether the goals are achieved or not is influenced by the number of CLIL hours in the curriculum, teacher characteristics, and classroom practices. Moreover, the exact goals of CLIL differ according to the model used. The small-scale applications of CLIL have more specific objectives compared with the programmes where over 50% of the curriculum is taught in an additional language. The general educational aims put forward in this chapter are broad and as such difficult to measure. So, in order to make use of them in the CLIL classroom, the goals need to be broken into specific learning objectives.

Theoretical Framework and Underlying Principles

There seems to be a general agreement that CLIL is still not a fully established educational model and more research is needed in order to create a conceptual framework that is both coherent and applicable in different conditions (Coyle, 2007; Dalton-Puffer, 2008; Dalton-Puffer et al., 2010, Gajo, 2007). Nevertheless, over the years the CLIL research has acquired a certain structure and studies from various fields focus on common categories. The

two most widely known conceptual anchors for CLIL are the 4Cs framework (Coyle, 2007; Coyle et al., 2010) and the five dimensions by Marsh, Maljers and Hartiala (2001). Although the concepts have four out of five categories in common, they differ in the sense that Marsh et al. view their CLIL dimensions as reasons for implementing CLIL, whereas the 4Cs framework could be seen more as a common basis for CLIL pedagogies (Coyle, 2007) or an organisational guide for the CLIL classroom (Mehisto et al., 2008).

Recently the 4Cs framework (Figure 1) has become one of the central models of the CLIL approach. It focuses on the interrelationship between content (subject matter), communication (language), cognition (learning and thinking), and culture (developing intercultural understanding).

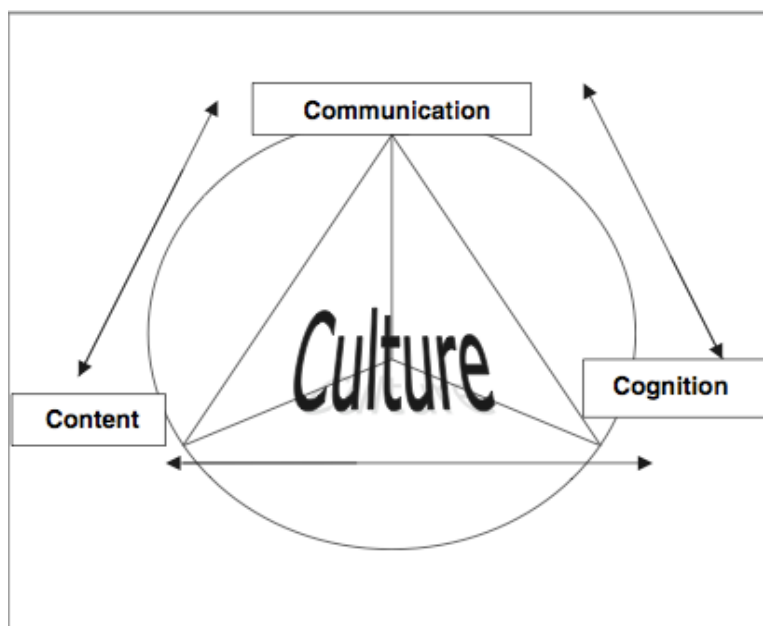


Figure 1. 4Cs Framework (Coyle, 2007)

The idea behind this concept is the understanding that CLIL is not just the combination of language and content. The model conceptualises integration on different levels. Coyle (2007) explains that it takes account of integrating content and language learning in specific contexts emphasising the symbiotic relationship that exists between the elements. She summarises the essence of the framework as follows:

... it is through progression in knowledge, skills and understanding of the content, engagement in associated cognitive processing, interaction in the communicative context, the development of appropriate language knowledge and skills as well as experiencing a deepening intercultural awareness that effective CLIL takes place. (Coyle, 2007, p. 550)

It is agreed by many CLIL researchers (Dalton-Puffer, 2008; Darn, 2006; Mehisto et al., 2008, Mehisto, 2008; Meyer, 2010) that the four elements comprising the 4Cs framework provide a sound foundation for the general issues of CLIL and that the concept of integration is of equally great importance here.

It has already been pointed out that implementing the CLIL approach does not automatically lead to successful teaching and learning. For CLIL to truly realise its potential the theoretical framework, integrative nature, and underlying principles of CLIL have to be adopted. So, in order to provide theoretical foundation for the research the key elements of CLIL will be described, specifically by reviewing the principles which have been formulated regarding language, content, cognition, culture, and integration. In the course of the process the elements will be dealt with separately. However, due to the inter-related nature of CLIL elements the borders between them are inevitably fuzzy.

Language. CLIL is based on a variety of methodologies as well as underlying principles of second language acquisition (SLA). For example, Dalton-Puffer and Smit (2007) suggest that Stephen D. Krashen's monitor model continues to be of major importance as a conceptual reference point for CLIL. Many researchers (Coyle et al., 2010; Meyer, 2010), on the other hand, emphasise the importance of Swain's output hypothesis for CLIL.

Krashen's monitor model (1985) emphasises the role of comprehensible, yet challenging input in a natural learning situation for language development. Although the model consists of five hypotheses, its main idea can be summarised in a single sentence: "People acquire second languages only if they obtain comprehensible input and if their affective filters are low enough to allow the input 'in'" (Krashen, 1985, p. 4). One has to admit that some of Krashen's ideas correspond to the principles of CLIL. The implications these ideas have for CLIL have been summarised by Dalton-Puffer and Smit (2007). They point out that firstly CLIL focuses on subject content rather than linguistic form (importance of comprehensible input), secondly CLIL is seen as a naturalistic learning environment (language acquisition rather than learning), and thirdly CLIL should reduce foreign language anxiety for it is only the content knowledge that is assessed in CLIL (the affective filter).

Krashen's model has received severe critique for relying solely on input to advance language competence. Swain (2000), however, was the first to claim that the production of output is as relevant to language learning as input. The basis for her claim was the research with French immersion students in Canada which showed that in spite of many years of comprehensible input in French the written and spoken French of these students was far from

being perfect. She concluded that output could be important to learning because it pushes learners to process language more deeply – with more mental effort – than does input. In addition, Swain emphasises the importance of collaborative work on tasks which require students to focus on problematic grammatical forms while still being oriented to meaning making. Coyle et al. (2010) support the view suggesting that it is fundamental to address both meaning and form in the CLIL classroom.

Second language acquisition theories have also led to developing the most well-known approach to language learning – namely the communicative approach. Considering that meaningful communication has always been a central dogma of the communicative approach to language teaching, Dalton-Puffer and Smit (2007) imply that “CLIL classrooms might even be regarded as the implementation of the principles of the communicative approach on a grand scale” (p. 8). Coyle et al. (2010) suggest that all the principles of communicative language learning are relevant for CLIL since it requires a focus on meaning as well as form and conceptualises language learning within authentic contexts for use.

Having addressed the ‘how’ of language learning in CLIL contexts, the ‘what’ needs to be discussed. To differentiate between types of language demands which have to be taken into account so that efficient teaching and learning could take place in the CLIL classroom Coyle et al. (2010) have created the language triptych. The triptych provides a means to analyse language needs across different CLIL contexts, viewing the target language from three perspectives: language of learning, language for learning, and language through learning. These can be summarised as follows:

- Language of learning focuses on the language needed for learners to understand basic concepts and skills relating to the subject theme or topic. It includes functional grammar, vocabulary, and structures.
- Language for learning is the kind of language learners need to operate successfully in a foreign language environment. It enables them to learn, take part in pair work and group work asking questions, arguing, reasoning, and so on. It develops learners’ skills to describe, evaluate, draw conclusions and helps to complete tasks effectively.
- Language through learning is based on the principle that learning should involve both language and thinking processes. It is the language that is needed by individual learners during the learning process and is therefore hard to predict. It encourages teachers to find ways of dealing with emerging situation related language.

(Coyle et al., 2010)

CLIL also fits into the combined concept of socio-cultural and constructivist approaches to language learning, which has become increasingly important over the last few years (Dalton-Puffer & Smit, 2007). This concept recognises the fundamentally social nature of learning focusing on the understanding that learning takes place in social situations where individuals practise social interaction (Moate, 2010). As a consequence “the CLIL classroom as a social setting with specific participant roles, purposes and discourse rules moves considerably more to the centre of the learning process“ (Dalton-Puffer & Smit, 2007, p. 11).

Drawing on the above, one can conclude that the main pillars of language learning in a CLIL setting are meaningful and challenging input, ample opportunities for interaction and output, simultaneous focus on meaning and form and identification of different language demands. In other words, CLIL should address the global issues at the same time drawing links to learners’ daily lives using collaborative work and tasks that lead to authentic interaction and do so in a way that learners’ foreign language anxiety is reduced. It is often suggested, however, that in terms of classroom practice there is a gulf between theory and practice, where language is not dealt with as the tool for communication. Considering that student interaction and output is generated by tasks, one can only agree with Meyer (2010) who suggests that Task-Based Language Teaching (TBLT) could be seen as a reservoir of methodological opportunities for the CLIL classroom. One of the main features of TBLT is the notion that authentic communication occurs when there are communication gaps between students which need to be bridged. All in all, if the language demands of CLIL classroom are analysed using the language triptych as a reference point and the underlying principles implemented, better overall language competence in the target language can be expected from CLIL.

Content. Firstly, it has to be established that content in a CLIL context is not necessarily a discipline from a traditional school curriculum. Coyle et al. (2010) point out that CLIL offers opportunities both within and beyond curriculum and the exact nature of content depends on the contextual variables. They suggest that content in the CLIL classroom could also be thematic, cross-curricular or interdisciplinary. However, identifying the type of content does not further the understanding of how content should be addressed in a CLIL setting.

To ensure that learners successfully deal with the challenges of CLIL it is essential for them to receive ample support. In CLIL literature, therefore, the term ‘scaffolding’ has acquired a prominent role. The original idea of scaffolding comes from the work of Jerome Bruner (1983). He defines scaffolding as follows: “a process of ‘setting up’ the situation to

make the child's entry easy and successful and then gradually pulling back and handing the role to the child as he becomes skilled enough to manage it" (p 60). Within a broader socio-cultural perspective, the word 'scaffolding' is often used to refer to assisted teaching and learning that emphasise the role of collaborative work and interaction between peers and teachers in moving learners from their existing levels of performance to higher levels of independent performance (Walqui, 2006).

There are many scaffolding strategies that may be appropriate for the CLIL classroom. The choice of the strategies depends on the content at hand, learners' needs and prior knowledge. For example, Walqui (2006) has described six kinds of scaffolding techniques that she regards as "especially salient" (p. 170) to help learners learn content subjects in a second language. These include:

- modelling (the teacher uses examples for students to imitate or demonstrates what students have to do);
- bridging (drawing links between students' previous knowledge and new input, for example activating knowledge they already have from personal experience);
- contextualising (using illustrative materials, organisers or verbal devices to make input more comprehensible);
- schema building (the teacher helps students organise their knowledge by creating mutually connected schemas);
- re-presenting text (students change texts into another form – visual or written);
- developing metacognition (students learn how to evaluate their work and are taught strategies of thinking).

Meyer (2010) suggests that scaffolding reduces the cognitive load of content, enables students to complete tasks through supportive structuring, and verbalise their thoughts. Moreover, according to Mehisto et al. (2008) scaffolding "helps students to better understand the learning process, to build momentum, to save time and to enjoy short-term wins. It lowers frustration and builds success" (p.139).

In conclusion, it is clear that CLIL learners benefit from the same effective pedagogies as all learners do, but in order to deal with the specific challenges presented through using an additional language to learn content they need additional support. Thus, the powerful instructional tool of scaffolding is needed to motivate, support and provide the means needed to deal with authentic materials and the challenging input of CLIL classroom.

Cognition. For content learning to be effective, learners must be cognitively engaged (Coyle et al., 2010; Lyster, 2007; Meyer, 2010; Mehisto et al., 2008). According to Watson and Young (1986, cited in Mehisto, 2008), however, out of 80,000 questions asked by teachers annually, 80% are at the knowledge level. It is often claimed that traditional teaching methods tend to separate language learning from general cognitive development (Lyster, 2007) but one cannot assume that teaching content through the medium of additional language automatically leads to cognitively engaging CLIL lessons. For example, out of 37 Estonian language CLIL lessons observed by Mehisto and Asser, only 27 included some questions that moved beyond the factual level and encouraged critical thinking (Mehisto, 2008). Thus, if the arguments about the importance of cognitive engagement are relevant to the CLIL classroom, strategies that promote cognitive engagement need to be applied.

The first classification of cognitive objectives, popularly known as Bloom's Taxonomy, which orders the cognitive processes hierarchically into knowledge, comprehension, application, analysis, synthesis, and evaluation was developed by Benjamin Bloom in the 1950s (Yassin, Tek, Alimon, Baharom & Ying, 2010). Bloom's revised taxonomy created by Anderson and Krathwohl consists of two dimensions – the cognitive process dimension and the knowledge dimension (Krathwohl, 2002) where the cognitive process dimension is a continuum from lower order thinking skills (remembering, understanding, and applying) to higher order thinking skills (analysing, evaluating and creating). The knowledge process dimension is a hierarchical structure of four types of knowledge (factual, conceptual, procedural, and metacognitive). It is suggested by Krathwohl (2002) that in combination the knowledge and cognitive process dimensions form a very useful tool for classifying learning objectives and activities. Based on the categories, teachers can decide where and how to improve their classroom practice so that learners' higher order thinking skills are developed and their knowledge would not be limited to factual knowledge.

However, the important point is not the choice of taxonomy, but rather the identification of the cognitive and knowledge processes associated with the CLIL content. According to Coyle et al (2010), this is essential not only to ensure that all learners have access to developing these processes, but that they also have the language needed to do so. Similarly, Meyer (2010) emphasises the relationship between the development of thinking skills and academic language use, suggesting that academic discourse function can be viewed as the intersection of content, cognition and language. Therefore, one important aspect that teachers need to take into account is the difference between learners' Basic Intercultural Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP) in the

foreign/second language (Cummins, 1979). Cummins points out that being fluent in a foreign language in everyday situations does not mean that teaching through this language can follow. This is due to the fact that everyday communication is often strongly context embedded and not cognitively challenging. Tasks at school, on the other hand, are usually cognitively demanding and context reduced. Dalton-Puffer (2008), for example, suggests that students may need special training in CALP even if they are fluent in language. So, the BICS-CALP distinction is intended to show that it takes longer to attain academic skills than communicative skills.

Another concept often used in association with CLIL is ‘multimodality’. The concept is concerned with different modes or manners in which students learn or teachers teach. Hansen-Pauly et al. (2009) suggest that a multimodal approach relies on both verbal and non-verbal input and is especially important in the situations where content is taught through an additional language. They argue that optimum learning conditions are created when verbal input is accompanied by non-verbal input, including visual (e.g. images, models), kinaesthetic (e.g. gestures, miming), or tactile (e.g. handling of models) style. Additionally, Hansen-Pauly et al. emphasise the role of computer-based digital technologies to provide new and quick access to multiple modes of representation.

To sum up, considering that meta-cognition and the fostering of critical thinking drive learning (Mehisto, 2008) and that thinking skills are the key to success in the information age (Meyer, 2010), one can hardly overestimate the role of cognition for CLIL. CLIL lesson planning and task design, therefore, have to consider learners’ cognitive needs as well as contextual aspects to support the development of higher order thinking skills and CALP. It means that the material should be presented in a multimodal way taking account of students’ different learning styles and the questions asked in the classroom should move beyond the factual level and deal with conceptual, procedural, and metacognitive knowledge.

Culture. One of the most obvious results of globalisation is the ever-increasing communication across cultures. Therefore, the integrated competencies in foreign languages and intercultural communication are considered to be keys to successfully participating in modern society (Sudhoff, 2010). A number of researchers claim that due to its simultaneous focus on content and language learning CLIL potentially offers a wide range of opportunities for developing intercultural understanding (Coyle et al., 2010; Dalton-Puffer, 2009; Meyer, 2010; Sudhoff, 2010). The prerequisites of the claim seem to be fulfilled in the notions that “content is never culturally neutral” (Sudhoff, 2010, p. 30) and “a language is a part of a

culture and a culture is a part of a language; the two are intricately interwoven” (Brown, 1994, p. 165).

According to Saluveer (2004), traditionally the emphasis in teaching culture in the language classroom has been on acquisition of cultural knowledge but more recently the focus has shifted on developing cultural awareness. Coyle et al. (2010) suggest that these two are important aspects to consider in the CLIL classroom but the move towards intercultural understanding involves different experiences. It starts with raising awareness about one’s own cultures, including culturally learned attitudes and behaviours, it involves mediation between one’s own and other cultures and embraces the development of learners’ cultural knowledge, skills and attitudes in interactive settings. Finally, Coyle et al. add that for CLIL to have a cultural impact, the interactive learning should not remain within the confines of the classroom.

Whilst Coyle et al. (2010) emphasise the importance of interactive setting to foster intercultural understanding, Dalton-Puffer (2009) points out that simultaneously the debate on defining communicative competence has been particularly lively regarding intercultural communication. Kramsch (2006), for example, has argued that communicative competence is not only about solving problems and completing tasks effectively. She suggests that nowadays the nature and the purpose of the task often have to be considered first.

It is clear, however, that the high intercultural potential of CLIL classes is strongly connected to the learning environment that is created in practice (Sudhoff, 2010). So, one has to consider the practical measures in which learners can explore cultural perspectives. Sudhoff, for instance, has emphasised the importance of work on content-related linguistic and terminological differences, exploration of cultural perspectives on the basis of materials (authentic materials from respective foreign cultural contexts) and shifting between one’s own and foreign cultural perspectives on the basis of topics.

In terms of classroom practice, CLIL lessons could be viewed as a cultural continuum from cultural knowledge to intercultural understanding, where it is acknowledged that learners need knowledge about cultures to develop cultural awareness and cultural awareness to achieve intercultural understanding, the latter being a prerequisite for successful intercultural communication. Additionally, for the learning environment to facilitate the development of intercultural understanding in CLIL classrooms, suitable learning materials need to be used together with methodologies that foster interaction, authenticity and real world orientation.

Integration. Several CLIL researchers consider the integration of content and language as central to the CLIL methodology (Lyster, 2007; Marsh et al., 2001; Mehisto, 2008). In the CLIL classroom, however, the need to integrate aspects relating to culture and cognition can be viewed as equally important to the learning process. The only way to address these multiple expectations and to achieve a balanced approach between all the elements is by acknowledging that the integration process cannot be taken for granted and as Gajo (2007) emphasises requires considerable effort from both teachers and students.

Mehisto (2008) suggests that “relational links are the glue that fixes learning in the memory” (p 103). He stresses the importance of creating cross-curricular links and fostering the integration of several subjects. Yet, in observing post elementary CLIL lessons in Estonia, he discovered that teachers took measures to support language learning in less than half of the lessons observed. Analysing the reasons for not maintaining a dual focus on content and language, Mehisto points out that among other things teachers lack teaching strategies for maintaining a balanced approach and are confused about the concept of integration.

Although Kysilka (1998) describes cross-curricular integration as having its own set of challenges, including confusion about the concept, she suggests that an integrated curriculum is based on the following fundamental beliefs:

- Genuine learning takes place as students are engaged in meaningful, purposeful activity.
- The most significant activities are those which are most directly related to students’ interests and needs.
- Subject matter is a means, not a goal.
- Knowledge in the real world is applied in an integrative fashion.
- Students need to know how to learn and how to think and should not focus on remembering facts.
- Teachers and students need to work co-operatively in the educative process to ensure successful learning.

In order to maintain a dual focus on content and language an understanding of various strategies for cross-curricular integration is also needed. For that several authors have presented their models of integrated curriculum. Fogarty (1991), for example, has identified ten models of curriculum integration, ranging from the fragmented model (traditional approach) to a completely networked approach. Drake and Burns (2004) have used the terms ‘multidisciplinary’, ‘interdisciplinary’, and ‘transdisciplinary’ to describe different possibilities for curriculum integration. These models help to start thinking about the

relationship of ‘what’ and ‘how’ in the classroom and this way support maintaining a balanced approach between the two.

In conclusion, it is clear from the above that linking content and language and creating cross-curricular links helps to make learning more meaningful. So, it is important to identify the links, first between knowledge, skills and processes within a single field, second between knowledge, skills and processes in separate fields, and third in the world outside of school. The latter is also emphasised by Mehisto (2008) who suggests that drawing links to learners’ lives and connecting learning to their community is of high importance in the CLIL classroom. Similarly, Kysilka (1998) stresses the idea that learners need to see a connection between what they are learning in school and what information, skills and knowledge they use in real life situations.

Teacher education and CLIL

The recent literature on CLIL stresses that the key to future capacity building and sustainability of the CLIL approach lies in teacher education (Coyle et al., 2010; Wolff, 2012). According to Coyle (2010), CLIL *per se* will not lead to sustainable changes and improvements in learner experiences and outcomes. The quality of CLIL practice depends on teacher supply and the professional development of teachers who understand how to put the innovative approach into practice in their classrooms.

The role of a CLIL teacher is twofold. They have to teach content and support students in the learning of the additional language at the same time. This raises the question of CLIL teachers’ target language proficiency. Even though it has been acknowledged that CLIL teachers require a good command of the target language, it is not clear what is considered the minimum proficiency necessary to apply the approach. According to Marsh (2002), teachers do not need to have native or near-native competence in the target language, although they need a high level of fluency. De Graaff et al. (2007) also challenge the requirement for native-like target language competence by asking if it is possible for those CLIL teachers who speak the target language fluently but do not have a background in language pedagogy to provide enough language support in the classroom.

Currently, many experts (Coonan, 2007; de Graaff et al., 2007; Mehisto, 2008; Coyle et al., 2010) agree that qualifications for teaching a certain subject and competence in the target language are not enough to become a successful CLIL teacher and specialized training in CLIL is considered to be important to deal with the challenges that the approach poses. Similarly, according to Wolff (2012), CLIL as an innovative approach can only be put into

practice on a larger scale if there are enough teachers who can teach content subjects through an additional language, i.e. who are not only qualified subject and foreign language teachers but who are also familiar with the CLIL approach.

The general acceptance of the need for specialized training in CLIL has led to discussions regarding the areas of competence for CLIL teachers. Hansen-Pauly et al. (2009) offer a framework of eight key areas for professional development in CLIL teaching. Moreover, The European Framework for CLIL Teacher Education by Marsh et al. (2010) provides a set of principles and ideas for designing CLIL professional development curricula focusing on the pedagogical competences for future CLIL educators.

Currently, CLIL has been implemented in Estonia mainly through Estonian- medium studies in Russian-medium schools and kindergartens. Even though European Union CLIL teachers are not required to have a specific CLIL certification or rarely receive extensive pre-service training (Eurydice, 2006), teacher training is considered a crucial factor for CLIL to be adopted in different contexts (Coyle, et al., 2010; Meyer, 2010). Furthermore, it has been suggested by Mehisto (2008) that training programmes would likely gain from 'walking the talk', ensuring that they apply the same principles that teachers are expected to apply in the classroom

Aim of the research and research questions

Education in its all forms and sectors moves towards integration. Estonian national curriculum for basic school (2010), for example, emphasises the role of integration in supporting the development of general and subject field competences. It offers a wide range of opportunities to implement CLIL, pointing out the use of cross-curricular themes, topical issues, study assignments, school projects and strategies as tools for achieving integration. However, it is apparent that teachers are unlikely to adopt an integrated approach without receiving training in the field.

The aim of the research is to examine the effectiveness of applying the CLIL principles outlined in the theory whilst teaching the topic of CLIL to teacher students. The research also aims to explore teacher students' perceptions regarding the effectiveness of the approach and examine how they evaluate the CLIL principles applied in the lesson. Based on the aim, the following research questions were asked:

1. *How effective are the CLIL principles in acquiring CLIL-related content?* While the effectiveness of the CLIL approach in the development of learners' target language competence has been confirmed, the research results concerning the learning of content

subject differ. Several studies show that applying CLIL has neither positive nor negative consequences on the acquisition of subject matter knowledge (Lasagabaster, 2008; Stohler, 2006; Van de Craen et al., 2007). Also, it is agreed by many authors that effectiveness in education can be measured through student achievement outcomes (Allan, Clarke & Jopling, 2009; Fraser, 1994).

2. *How do the CLIL-related test results differ according to groups and teacher students' self-evaluated knowledge of English?* CLIL is deeply rooted in different general learning theories and second language acquisition (SLA) theories (Coyle, et al. 2010; Dalton-Puffer & Smit, 2007). Teacher students' previous knowledge in educational disciplines might, therefore, be a factor affecting the comprehension and assimilation of the CLIL approach. A question asked in many debates about CLIL is whether the additional language complicates the learning of content subject (Gajo & Serra, 2002; Heine, 2010; Van de Craen et al., 2007). It is suggested by Van de Craen et al. (2007) that more research is needed regarding older learners' knowledge acquisition.

3. *How do teacher students perceive achieving the aims and outcomes of the CLIL lesson?* Learner perceptions on the methodology and content are important to consider in practice and should become a part of exploratory studies (Eken 1999; Hawkey, 2006).

4. *How do teacher students evaluate the CLIL principles applied in the lesson?* The CLIL approach has incorporated the best practice of many different learning theories (Coyle et al., 2010). While principles such as active learning, including group activities and varying ways of teaching content are regarded as effective teaching practices in different contexts, CLIL also implements more specific principles, namely scaffolding, authenticity as well as integrating content and language acquisition (Mehisto et al., 2008; Meyer, 2010).

Method

Action research

The current study follows an action research approach in its quest to problematise, plan, act, and collect data first and describe, analyse, and understand the effects of the action thereafter. Action research is often defined as a form of educational research where an actively involved professional engages in a systematic, intentional inquiry into some aspect of practice for the purpose of understanding and improvement (Kemmis & McTaggart, 1988; McNiff & Whitehead, 2009; Sagor, 1992). Burns (2010) offers a more practical definition

suggesting that action research is a response to a perceived problem or an identified “gap” related to, for example, teaching, learning and the curriculum.

Reviewing the definitions of action research it is possible to suggest that action research has some key principles. First, it is a practice based research (McNiff & Whitehead, 2009), aiming to implement a change and bring about practical improvements (Burns, 2010; Kemmis & McTaggart, 1988; McNiff & Whitehead, 2009; Sagor, 1992). Second, action research typically is a step by step process (Kemmis & McTaggart, 1988; McNiff & Whitehead, 2009; Sagor, 1992). Third, it is collaborative, which means that everybody’s view is considered in order to understand the situation (Kemmis & McTaggart, 1988). Fourth, action research is not pre-determined but changes and develops (Burns, 2010; Cohen, Manion & Morrison, 2007). Finally, it is small-scale and local in character, aiming to investigate teaching-learning issues of a school or classroom (Burns, 2010). So, it was decided that the current study meets the requirements of an action research approach in the sense that it is practice based, change-oriented, cyclical, collaborative, and small-scale.

In the current action research, a classic four-stage model created by Kemmis and McTaggart (1998) was used. In the planning stage, the target group of teacher students was decided upon and a 90-minute introductory CLIL lesson following the CLIL methodology was devised. The following learning outcomes were set: by the end of the lesson the teacher students were expected to know the basic principles of CLIL, be able to describe the 4Cs of CLIL and know the most important CLIL-related concepts. Additionally, the lesson had language-related aims. These focused on developing teacher students’ CLIL-related lexis, their ability to speculate, notice and analyse language as well as present findings. The aims regarding cognition were concerned with prediction, categorising and evaluation. Moreover, the lesson aimed at giving the teacher students a practical CLIL experience, creating interest in and a positive attitude towards CLIL.

According to Sagor (1992), the categories of data sources available to action researchers include existing sources (e.g., student work, archival evidence), tools for capturing everyday life (e.g., journals, logs, videos, observation checklists), and tools for questioning (e.g., interviews, questionnaires, tests). For the current study, a multiple choice test and a questionnaire (see Appendix 1) were chosen for data collection tools. Also, an observation checklist (see Appendix 2) for an outside assessor was designed in order to ensure that the CLIL principles outlined in the theory were actually applied in the teaching process. Finally, it was decided there was no need for pre-testing as it was established that the teacher students had no prior knowledge of the subject.

In the phase of action, the instructor informed the participants of the learning outcomes set for the lesson and carried out the lesson according to the plan. Subsequently, data was collected in the observation stage of the research. The outside observer (an English didactics lecturer) followed the teaching process taking note of the CLIL principles applied in the lesson on the pre-prepared checklist. The tests and questionnaires were administered by the instructor at the end of the lesson.

Finally, in the reflection phase, the effects of the lesson were described and evaluated. As a result, it was decided to repeat the action research with another group of teacher students in order to see the effects more clearly. Following a suggestion from a respondent a minor change regarding the scaffolding of the learning process was introduced for the second cycle of the action.

One way to ensure that action research provides data that is both valid and reliable as well as gives a well-rounded view of the study is through the triangulation of source and method. This means collecting data from more than one source, at different points in time, and with different subgroups of people. For the purpose of the current study a multiple choice test and a questionnaire were used for data collection and an observation checklist was compiled to compare and cross-check the findings. Moreover, data was collected with two different groups of teacher students, so that the findings could be compared across two different groups.

In order to follow the principle of voluntary participation, all potential respondents were fully informed about the procedure and circumstances of the action research beforehand. At the beginning of the lesson the circumstances of the lesson were described once again and the participants were assured that the findings of the research were anonymous, confidential and used for educational purposes only.

Sample

The size of the sample was 25 teacher students all of whom trained to teach several subjects. The sample consisted of eighteen 3rd year students of the educational science programme and seven 4th year students of the primary education programme. The groups were selected pragmatically according to their availability and their willingness to take part in the study. The respondents' self-evaluated level of English ranged from intermediate to advanced level, being advanced in the case of 11 participants, upper-intermediate in the case of 10 participants and intermediate in the case of 4 participants. All the 25 tests and questionnaires distributed to the respondents were returned.

Data collection instruments

The data for the study was elicited by means of two instruments: 1) a test consisting of ten multiple choice questions aimed at assessing the comprehension and assimilation of the nature, elements and the most important concepts of CLIL and 2) a questionnaire comprising 17 five-point Likert scale statements to research teacher students' perceptions regarding the aims and learning outcomes of the CLIL lesson and to enquire how they perceived CLIL as a form of instruction (see Appendix 1). Both the test and questionnaire were written in English.

The test was assumed to be suitable for studying the effectiveness of CLIL as a form of instruction as many studies in teaching effectiveness take achievement against standardized tests as the benchmark for an outcome measure (Campbell et al., 2004). The test was compiled based on the content-related learning outcomes set for the lesson. The language-related questions were not included in the test, for as a rule language skills are not graded in CLIL. The first two questions of the test were concerned with the nature of CLIL, the following four questions dealt with its main elements (the 4Cs) and the last four questions focused on the most important concepts associated with CLIL. For all the ten questions, students were expected to complete statements choosing the best of the three given options. All the answer alternatives were dichotomously coded (0 = incorrect, 1 = correct), so that the maximum score for the test was 30.

The questionnaire of Likert scale statements (5 = strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, 1 = strongly disagree) was chosen to study teacher students' perceptions of the CLIL lesson. The first set of seven statements sought to investigate to what extent achieving the language-, content-, and cognition-related aims and outcomes of the lesson were perceived, whether the lesson was perceived as a practical CLIL experience and if it succeeded in creating interest in and a positive attitude towards CLIL.

The following ten statements explored how the teacher students evaluated the lesson format and the methodology applied in the lesson. The statements were formed based on the main principles of CLIL methodology outlined in the theory and enquired about material presentation, scaffolding, task design, peer cooperation, lesson setup and materials.

Additionally, participants were given a chance to add further comments on the lesson. In order to get some information about the students, they were asked to evaluate their level of English and indicate which educational courses they had passed.

The test and questionnaire were designed to be administered to an entire group in about

ten minutes. The questionnaire achieved a high degree of reliability. Cronbach's alpha, a measure of internal consistency, was .82.

Data analysis procedures

The data was analysed using SPSS 17.0. Means and standard deviation tables were compiled of the teacher students' test scores and perceptions. T-test was used to evaluate the significance of the test results according to groups. In order to determine a relationship between the teacher students' self-evaluated knowledge of English and their test results one-way Anova test was run. The Spearman's rank correlation test was used to identify the relationship between the teacher students' test scores and their perceptions.

Results

Effectiveness of the CLIL principles in acquiring CLIL-related content

In order to explore the effectiveness of CLIL as a form of instruction, the test scores in the whole sample as well as between the two groups - 3rd year students of the educational science programme (further referred to as group 1) and 4th year students of the primary education programme (group 2) were examined using descriptive statistics and Independent Samples T-test. The means and standard deviations of the test results are given in Table 1.

Table 1. Teacher Students' Test Scores

	Total N (25)		Group 1 N (18)		Group 2 N (7)	
	Mean	SD	Mean	SD	Mean	SD
Question 1	2.80	.577	2.83	.514	2.71	.756
Question 2	3.00	.000	3.00	.000	3.00	.000
Question 3	2.92	.400	2.89	.471	3.00	.000
Question 4	2.52	.872	2.33	.970	3.00	.000
Question 5	2.96	.200	2.94	.236	3.00	.000
Question 6	2.68	.748	2.56	.856	3.00	.000
Question 7	2.92	.400	2.89	.471	3.00	.000
Question 8	2.80	.577	2.72	.669	3.00	.000
Question 9	3.00	.000	3.00	.000	3.00	.000
Question 10	2.96	.200	2.94	.236	3.00	.000
Total test score	28.56	2.064	28.11	2.246	29.71	.756

As Table 1 illustrates, group 2 not only understood the aim of CLIL (question 2) but also obtained maximum scores for questions enquiring about the elements of CLIL (3-6) and focusing on the concepts of ‘scaffolding’ (7), ‘multimodal input’ (8), ‘interaction patterns’ (9) and ‘higher order thinking skills’ (10). The only question with a lower mean score (2.71) asked about the underlying principle of CLIL.

As for group 1, maximum scores were achieved in questions 2 and 9. The questions which were concerned with the elements of CLIL produced more mixed results for the group, however. Question 6, for example, which dealt with the meaning of content in CLIL had the lowest mean score (2.33) lowering the mean for the overall group to 2.52. Similarly, question 4 enquiring about culture in CLIL contexts had the mean score of 2.56, being the second lowest result. Also, the total mean score of 28.56 for the overall group suggests that the CLIL principles implemented in the lessons were effective regarding the acquisition CLIL-related knowledge.

Test results according to groups and teacher students’ self-evaluated knowledge of English

In order to evaluate the inter-group significance of the test results T-test was carried out. The results obtained from the test showed that the mean scores of the two groups are significantly different ($p < .05$) being 29.71 for the 4th year primary school teacher students and 28.11 for the 3rd year educational sciences teacher students (Table 1).

Also, to find out whether the teacher students’ self-evaluated knowledge of English is related to their test results one-way Anova test was used. As determined by the test, there were no statistically significant differences between the intermediate, upper-intermediate and advanced level teacher students’ test scores ($p = .829$).

Teacher students’ perceptions on achieving the aims and outcomes of the CLIL lesson

To examine how the teacher students perceived achieving the learning outcomes and aims set for the lesson descriptive statistics were used. Table 2 provides the means and standard deviations in the whole sample and according to the groups.

Table 2. Teacher students' perceptions on achieving the aims and learning outcomes of the CLIL lesson

Statements	Total (N) 25		Group 1 (N) 18		Group 2 (N) 7	
	Mean	SD	Mean	SD	Mean	SD
1. I know some CLIL-related vocabulary.	4.32	.557	4.44	.511	4.00	.577
2. I know the basic principles of the CLIL approach.	4.52	.653	4.44	.705	4.71	.488
3. I had a chance to practice my communicative skills.	4.28	.891	4.17	.924	4.57	.787
4. The CLIL lesson made me think and focus.	4.24	.597	4.17	.514	4.43	.787
5. The lesson gave me an idea how CLIL works in practice.	4.00	.957	4.00	.970	4.00	1.000
6. I would like to know more about CLIL.	4.24	.436	4.17	.383	4.43	.535
7. CLIL seems to be a useful and innovative educational approach	4.52	.653	4.39	.698	4.86	.378
Total	4.30	.346	4.25	.355	4.43	.309

As can be seen in Table 2, the mean item scores (4.00 to 4.52) and small standard deviations (.436 to .957) for the whole sample indicate that the majority of teacher students agreed to achieving the aims and learning outcomes set for the CLIL lesson and therefore perceived it to be effective. The modal responses for all the scale items were “agree” or “strongly agree”. The statement 5 enquiring whether the lesson was perceived as a practical CLIL experience received the lowest mean ranking (4.00) for the overall group. The statement also had the highest standard deviation (.957) in the whole sample suggesting the greatest variability in the teacher students' perceptions on the question. To find out whether teacher students' perceptions depended on their test results correlation analysis (Spearman r) was applied. There was a weak, positive correlation between the test results and the perceived learning outcomes, which was statistically significant ($r = .359$; $p < .05$).

Teacher students' evaluation of the principles applied in the lesson

In order to examine how the teacher students evaluated the CLIL principles applied in the lesson descriptive statistics were used. Table 3 gives an overview of the means and standard deviations in the whole sample and according to the groups.

Table 3. Teacher students' evaluation of the CLIL principles

Statements	Total (N) 25		Group 1 (N) 18		Group 2 (N) 7	
	Mean	SD	Mean	SD	Mean	SD
8. The material presented in the class was challenging.	3.84	.800	3.78	.878	4.00	.577
9. The presentation of the material was clear.	4.40	.707	4.39	.778	4.43	.535
10. The presentation of the material suited my learning style.	4.44	.712	4.39	.698	4.57	.787
11. Enough language support was provided in the class.	4.60	.500	4.61	.502	4.57	.535
12. Participating in pair and group work supported learning.	4.64	.569	4.61	.608	4.71	.488
13. The use of different tasks helped to understand the content.	4.80	.408	4.78	.428	4.86	.378
14. The use of authentic materials was beneficial to learning.	4.36	.700	4.39	.608	4.29	.951
15. The lesson setup made me participate actively in learning.	4.32	.627	4.33	.686	4.29	.488
16. The tasks encouraged me to express my opinion.	4.12	.666	4.11	.676	4.14	.690
17. My English enabled me to complete all the tasks successfully	4.64	.490	4.67	.485	4.57	.535
Total	4.42	.361	4.41	.387	4.44	.310

As Table 3 reveals, the mean item scores (3.84 to 4.80) and standard deviation (.408 to .800) for the whole sample suggest that most of the respondents found the CLIL principles applied in the lesson beneficial to the learning process. The assumptions are confirmed in examining the modal responses for all the statements. The modal response for statements 8, 9, 15 and 16 was “agree”, while for items 10-14 and 17 it was “strongly agree”. The statement 8, which asked whether the material presented in the lesson was challenging received the lowest mean ranking (3.84). This question also had the highest standard deviation suggesting a wide span of opinion in this question. Although the modal response of the statement was “agree”, the number of respondents who disagreed with the statement or neither agreed nor disagreed was two and four respectively making it the least heterogeneous response of the scale.

The last item of the questionnaire (question 18) was meant to study the respondents' further comments on the CLIL lesson. Out of 25 respondents 17 used the opportunity to express their opinion. The comments were reviewed and recurring themes from the responses were identified. The themes focused on the following three fields: the subject of CLIL, the CLIL lesson and the methodology used in the lesson. Almost all the respondents commented on the topic and the lesson. The comments on the methodology were fewer but more thorough.

The words *useful* and *interesting* were exploited most often to describe the subject of CLIL. The importance of the topic was also emphasised by stating: *It is important for me to find out more about it* and by pointing out: *I like the fact that CLIL's purpose is to make students more tolerant*. Moreover, it was suggested: *The subject should be included in the curriculum of educational science*. One respondent, however, acknowledged: *The time was too short to understand the concept fully*.

As for the CLIL lesson, the opinions ranged from *nice*, to *really exciting* being most often either *interesting* or *very interesting*. Contradictory viewpoints were expressed concerning the practical applicability of CLIL. One teacher student pointed out: *The lesson gave a good idea how CLIL works ...*, while another respondent expressed a wish to see how CLIL would work in the real classroom adding: *I can't imagine what the teacher should do to make it work*.

Regarding the methodology used in the classroom several CLIL-specific strategies were pointed out. Several teacher students mentioned the variety of techniques and tasks used in the lesson. Also, some personal preferences regarding the nature of the tasks were expressed: *I liked the information transfer activity a lot and ... for me the tasks were very motivating*. The importance of active learning was stressed by one respondent: *I liked that students were working and the teacher only had to support* as well as the principle of building on the existing knowledge: *... the new knowledge was based on the previous one*. The material presented in the lesson was viewed as *challenging* and the form of instruction considered *good for communicating* by one and two teacher students respectively. A comment suggesting that *... a lot of feedback and encouragement was given ...* could be perceived as an opinion on scaffolding the learning process.

One very useful comment was made regarding the practical setup of the lesson: *A minor discomfort was that when the groups changed back from group work to pair work, some pairs didn't have the definition cards to do the exercise on handout 3*. The suggestion was taken into account and in the second lesson all the pairs had their own sets of definition cards.

According to the feedback from the lesson observer, the teaching aims of the lesson were clear and the learning outcomes defined. The lesson contained most of the CLIL elements

focusing simultaneously on content, communication, and cognition. The lesson was not observed to promote awareness of cultural difference. However, the CLIL principles relating to content, communication and cognition were employed fully in the lesson. Moreover, the opportunities to draw links between learning and real life were seized, active learning promoted and different learning styles considered. Content and language acquisition was scaffolded by building on teacher students' previous knowledge and repackaging the information in user-friendly ways.

Discussion

Content and Language Integrated Learning (CLIL) is answering the call of the global age as it prepares learners for the demands of an integrated society (Mehisto, Marsh & Frigols, 2008). In CLIL classrooms content subjects are taught through a foreign language which eliminates the traditional separation of content and language teaching. Research has shown that the benefits of the approach are numerous. However, justified concerns have been voiced that the CLIL approach may fail to reach its potential unless teachers recognise its value and are ready to embrace the change by adopting the innovative CLIL approach.

The current study examined how effective the CLIL principles were in acquiring content knowledge about CLIL, enquired about teacher students' perceptions regarding the effectiveness of the approach and explored how they evaluated the CLIL principles applied in the lesson. The results of the study were interpreted using CLIL literature, the related research as well as critical reflection from the author's personal experience as a teacher and a teacher trainer. Moreover, as it is suggested that one should remain open-eyed and open-minded when interpreting the findings of action research (Burns, 2010), the lesson observation data was used to compare and cross-check the findings.

The results of the research supported an understanding that using CLIL as a means of teaching non-linguistic subject does not impair content acquisition. The findings suggest that the CLIL principles applied in the lessons were effective in acquiring content knowledge about the topic of CLIL. The results of the research are consistent with the research of Stohler (2006) and Lasagabaster (2008) who claim that the use of CLIL does not have negative effects on the learning of content. However, the research on CLIL has focused mainly on primary and secondary education. The research by Hellekjaer and Wilkinson (2001), which was carried out among Norwegian university students to explore their perceptions of CLIL also concluded that CLIL courses were perceived to be as effective as courses held in mother tongue. In fact, students who studied through the medium of English showed a slight tendency

to rate their courses better. The two questions of the test, which received the lowest scores were concerned with the elements of CLIL. More specifically, they enquired about the meaning of content and culture in CLIL. While CLIL potentially offers ample opportunities to develop intercultural understanding (Coyle et al., 2010; Dalton-Puffer, 2009; Meyer, 2010; Sudhoff, 2010), one has to acknowledge that the elusive nature of culture makes it difficult to incorporate the element into a CLIL lesson. However, it is difficult to suggest a reasonable explanation why the question regarding the content appeared to pose some problems.

Additionally, the research findings indicated that the content-related learning outcomes of the teacher students participating in the study differed according to the groups. A possible explanation for the result could be the circumstance that the 4th year primary school teacher students had a better knowledge of educational disciplines compared with the 3rd year students of the educational science programme. CLIL is deeply rooted in many general learning and second language acquisition theories. It also shares some elements with a range educational practices (Coyle, et al. 2010; Dalton-Puffer & Smit, 2007). Moreover, Dalton-Puffer and Smit (2007) imply that the principles of communicative approach are fully implemented in CLIL classrooms, which means that the previous knowledge of foreign language didactics could be seen as a particularly significant factor in fostering the understanding of the CLIL concept. De Graaff et al. (2007) also suggest that a background in language pedagogy is needed to provide enough language support in the CLIL classroom. The small number of the 4th year students is accepted as a limitation for the study. However, the results seem to indicate that there is a relationship between the previous knowledge of didactics and understanding the CLIL approach.

The research discovered that there were no significant differences between the teacher students' self-evaluated knowledge of English and their content-related test scores. Heine (2010) refers to the situation where CLIL students are in their subject matter knowledge on a comparable level to learners studying in their mother tongue as the CLIL paradox. In a way the same 'paradox' appeared in the case of the current action research. There is a remarkable difference between the intermediate and advanced level knowledge of English, yet the difference could not be detected in the teacher students' test scores. Heine (2010) proposes that CLIL learners compensate for the lack of comprehension through context knowledge. In the CLIL classroom, context is realised in the principles of building on the previous knowledge and scaffolding learning through different strategies.

Furthermore, the findings of the research also suggested that the teacher students perceived the lessons to be effective as the majority agreed or strongly agreed to achieving the

aims and learning outcomes set for the lesson. The aims of a CLIL lesson are multiple and varied. One should set content-, language- and cognition-related aims for all the lessons. In the case of the current research, the lessons aimed, among other things, at creating a positive attitude towards CLIL. Together with the content-related aim set for the lesson the item received the highest ranking from the teacher students. So, it was not surprising that most of the respondents also added many further comments relating to the usefulness and potential of the subject in the open-ended section of the questionnaire. The question enquiring whether the lesson was perceived as a practical CLIL experience produced the biggest range of opinions, however. Contradictory views on the issue of the practical applicability of CLIL were also expressed in the comments' section. The challenge of CLIL is that it can be used and developed across very different types of educational institutions and classrooms. CLIL takes account of local needs and can be adapted to pre-school, primary, secondary, tertiary, and adult education. Given the broadness of the approach, it might be difficult to see it implemented in various contexts based on just two lessons.

Moreover, the empirical evidence derived from this study confirms that the respondents perceived the CLIL approach as beneficial to the learning process. The results were consistent with the feedback from the classroom observer, which suggested that the teacher students were actively engaged at all the stages of the lesson. Furthermore, several positive comments were added regarding active learning, progression built into tasks, variety of the tasks and scaffolding learning. So, any results different from the above would have been a surprise. The principles that were highly appreciated by the majority of the teacher students were concerned with the variety of tasks, peer cooperative work, scaffolding, multimodal input and authenticity of the materials. Some of the CLIL principles also feature highly in the studies of effective teaching in tertiary education (see Allen, Clarke & Jopling, 2009) where students rank highly principles such as promoting active learning, including group activities, varying ways of teaching content, and encouraging discussion in sessions. So, CLIL incorporates the best practices of effective teaching adding the ones that make it possible to learn successfully in a language other than one's own. However, it was somewhat confusing that the question enquiring whether the material presented in the lesson was challenging received the lowest ranking. The materials used in the lesson were based on authentic texts and therefore rather demanding. The feedback from the classroom observer also showed that the questions and problems presented in the lesson were at the appropriate cognitive level. One possible explanation for the finding is that some respondents interpreted the word 'challenging' as

'difficult' rather than 'offering problems to test one's abilities'. Moreover, it was surprising that there were no comments regarding the question.

There are two main limitations to the present research. First, a small-scale study with a sample of 25 participants gives no potential for generalizing the findings. Second, as the focus of the research was rather specific, it was not possible to find previous studies regarding teachers' or teacher students' perceptions of the CLIL approach. Moreover, although there are several studies examining the effectiveness of CLIL in acquiring content knowledge, they focus on primary and secondary education. The position of CLIL is at an exploratory stage in higher and adult education and so is the research in the field. Added to this, since the current research was not a comparative study, it cannot be said that the CLIL approach is more or less effective than any other form of instruction. Nevertheless, the research raises some issues worth further investigation. To begin with, the content-related tests administered in this study examined the respondents' immediate performance. However, a delayed test might have examined how well the knowledge was retained. Re-testing the teacher students would have shed some light on the long-term benefits of CLIL. Also, including in-service teachers into the research could have made a difference to the outcomes. It might have explored how in-service teachers' perceptions differ from those of teacher students' regarding the innovative practice of CLIL.

In terms of the didactic implications of the current research, some pedagogic principles can be derived and set out as discussion points for creating effective learning opportunities for both pre-service and in-service teachers who want to start using CLIL in their classrooms. First, the findings suggest that CLIL training programmes would gain from applying the same principles that teachers are expected to apply in their classrooms. In the case of teacher training programmes, the benefits of the practice could be three-fold – by applying the CLIL approach teachers make use of an effective way to learn content, develop the target language competence and have a practical CLIL experience at the same time. Moreover, when setting up a CLIL programme for teachers it would be useful to give special consideration to the principles that were perceived as most beneficial to understanding CLIL. The principles include peer cooperative work, task-based approach, active learning, scaffolding, multimodal input and authenticity of the materials. Finally, as teachers' previous knowledge of didactics might influence their understanding of the CLIL approach, it should be taken into account when planning courses for teachers. For one thing, it would probably be more effective to provide separate training courses for language and subject teachers. As knowledge in foreign language didactics is considered an important factor in applying the CLIL approach, teachers

who do not have a background in language pedagogy need to focus more on strategies that help contribute to their students' target language development and scaffold their learning.

According to Coyle (2007), the strength of CLIL is in integrating content and language learning in varied learning environments built on bottom-up initiatives and top-down policies. In Europe, CLIL has been mostly a bottom-up movement, while in Estonia its use has been dictated by the strategic need for better Estonian language competence in Russian-medium schools. However, innovation in education is successful if different initiatives share the same goals. So, it can be hoped that the current paper will increase teachers' awareness of CLIL and encourage further research and initiatives in the field.

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Declaration of authenticity

I hereby confirm that the present thesis has been written independently and by myself alone. It complies with the regulations of the Institute of Education of Tartu University and meets the accepted standards with regard to originality and quality.

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Dear Teacher Student,

The anonymous test and questionnaire are part of a master thesis investigating CLIL as a form of instruction in teacher education. The findings of the research are used for educational purposes only.

Thank you for your assistance!

Aile Lehtse

aile@folkuniversitetet.ee

CLIL TEST

For all the questions, choose the best option (a, b or c) to complete each statement about CLIL.

- 1) Using CLIL helps students
 - a) learn new subject knowledge.
 - b) learn new subject knowledge and language together.
 - c) get better grades in all the subjects.
- 2) CLIL aims is at
 - a) increasing learners' grammar-related skills.
 - b) increasing learners' artistic skills.
 - c) preparing learners for life in an internationalised society.
- 3) The 4Cs framework of CLIL focuses on the interrelationship between
 - a) content, citizenship, culture, and cognition.
 - b) content, communication, culture, and creativity.
 - c) content, communication, culture and cognition.
- 4) Content in a CLIL classroom could be
 - a) Geography.
 - b) English.
 - c) Estonian.
- 5) Communication in CLIL aims at
 - a) increasing student talking time.
 - b) increasing teacher talking time.
 - c) encouraging learners' listening skills.
- 6) Culture in CLIL focuses on
 - a) teaching facts about other countries.
 - b) teaching facts about one's own country.
 - c) developing awareness of local community and citizenship.

- 7) Scaffolding means that
- new material is presented verbally and non-verbally.
 - information is repackaged in ways that support learning.
 - only authentic materials are used in the classroom.
- 8) Multimodal input means that
- new material is presented verbally and non-verbally.
 - information is repackaged in ways that support learning.
 - only authentic materials are used in the classroom.
- 9) An interaction pattern that helps increase student talking time is
- individual work.
 - group work.
 - open class.
- 10) Higher order thinking skills include
- remembering.
 - analysing.
 - understanding.

QUESTIONNAIRE

Group _____

How do you evaluate your level of English (*underline the appropriate option*):

B1 (Intermediate) B2 (Upper-Intermediate) C1 (Advanced)

Please read through the statements regarding the CLIL lesson you have just participated in and circle the one number, which best reflects your view (5 = strongly agree; 4 = agree; 3 = neither agree nor disagree; 2 = disagree; 1 = strongly disagree)

PERCEPTIONS REGARDING THE AIMS AND LEARNING OUTCOMES	
1. I know some CLIL-related vocabulary.	5 4 3 2 1
2. I know the basic principles of the CLIL approach.	5 4 3 2 1
3. I was given a chance to practice my communicative skills	5 4 3 2 1
4. The CLIL lesson made me think and focus.	5 4 3 2 1
5. The lesson setup gave me an idea how CLIL should work in practice.	5 4 3 2 1
6. I would like to know more about CLIL.	5 4 3 2 1
7. CLIL seems to be a useful and innovative educational approach.	5 4 3 2 1

PERCEPTIONS REGARDING THE FORM OF INSTRUCTION	
8. The material presented in the class was challenging.	5 4 3 2 1
9. The presentation of the material was clear.	5 4 3 2 1
10. The presentation of the material suited my learning style.	5 4 3 2 1
11. Enough language support was provided in the class.	5 4 3 2 1
12. Participating in pair and group work supported the learning process.	5 4 3 2 1
13. The use of different tasks helped to understand the content.	5 4 3 2 1
14. The use of authentic materials was beneficial to the learning process.	5 4 3 2 1
15. The lesson setup made me participate actively in learning.	5 4 3 2 1
16. The communicative tasks encouraged me to express my opinion.	5 4 3 2 1
17. My English skills enabled me to complete all the tasks successfully.	5 4 3 2 1

18. Do you have any further comments or things to add? Answer in your own words.

CLIL Checklist

Topic: CLIL

Introductory lesson

Teaching aims and learning outcomes

- Are the teaching aims clear?
- Are the learning outcomes defined? Are they measurable?

Content

- Has the instructor considered how to scaffold content learning?
- Is the presentation of new content clear?
- Is the content accessible?

Communication/ Language

- Are the students involved in using language?
- Are there adequate opportunities for them to practise the new language?
- Are the instructions clear?
- Are the questions at the appropriate level?
- Are the new concepts presented clearly?

Cognition/ Thinking

- Are the questions/ problems to be solved at the appropriate cognitive level?
- Do the questions/ tasks move beyond the factual level?

Culture

- Has it been considered how the topic can promote awareness of cultural difference?
- Have the opportunities to draw links between learning and the real life been identified?

Scaffolding

- Does the instructor build on students' existing knowledge and experience?
- Is the information repackaged in user-friendly ways?
- Does the teaching respond to different learning styles?

Active learning

- Do the students communicate more than the instructor does?
- Is progression built into language and content tasks?
- Does the instructor favour peer cooperative work?

Comments

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