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Exploring Dual-Focussed Education
Integrating language and content for individual and societal needs

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Preface

Bilingual and multilingual issues are rapidly becoming an integral part of our modern society. Practice has brought bilingual education programmes –where language and content are integrated– into our classrooms, thereby extending the possibilities for students of different ages and abilities to become multilingual. *Access to knowledge* was once crucial for building our modern society; now *access to knowledge through languages* is important for giving people equal opportunities of being an active part of the pervasive internationalisation of all domains of life.

In Finland, like in many other countries, dual-focussed education ranges from total second language immersion programmes and content teaching in a foreign language to language teaching based on thematic units. We are convinced that even if there is major variation in the external conditions of the different approaches of dual-focussed education, they share many internal challenges. The most crucial of them is the challenge of fully maximizing pedagogical means for simultaneous acquisition of language and content. Only by focusing each individual external and internal condition on the programme is it possible to fully explore the potentials of dual-focussed education. As we develop the multilingual potentials in different parts of the world, it is essential that we come together, share our knowledge and discuss the consequences at both the individual and societal levels.

In November 2004, an International Conference on CLIL (Content and language integrated learning) and Immersion Education was held in Kokkola/Karleby, Finland. The conference brought together about 200 participants from 10 countries to share their knowledge about multilingual education.

This volume contains a selection of the presentations given at the conference. The first part of the proceedings consists of keynote presentations by Dr. Roy Lyster (McGill University) and Dr. Karita Mård-Miettinen (University of Vaasa) and parallel presentations by Dr. Marina Bergström (University of Vaasa), Dr. Aini-Kristiina Jäppinen

(University of Jyväskylä), Dr. Eeva Rauto (Vaasa Polytechnic) and Dr. Margareta Södergård (University of Vaasa/Åbo Akademi University). The second part of this volume consists of articles based on papers presented by Joanna Anckar, Phil.lic. (Åbo Akademi University/University of Jyväskylä), Mari Bergroth, M.A. (University of Vaasa), Dr. Siv Björklund (University of Vaasa/Society of Swedish Literature in Finland), Päivi Kukkonen, M.Sc. (Teacher Training School, University of Turku), Dr. Carol Macdonald & Mr Peter Moodie (University of the Witatersrand) and Dr. Tuula Merisuo-Storm (University of Turku).

All articles in this book have undergone full anonymous refereeing. We wish to express our warmest thanks to the referees: Professor Joaquim Arnau (Universitat de Barcelona), Professor Colin Baker (University of Wales), Dr. Martina Buss (University of Vaasa), Dr. Maria Dobrenov-Major (Griffith University), Dr. Glenn Ole Hellekjaer (University of Oslo), Professor Christer Laurén (University of Vaasa), Professor Hanna Lehti-Eklund (University of Helsinki), Professor Marianne Nordman (University of Vaasa), Dr. Catrin Norrby (University of Melbourne), Dr. Jaana Puskala (University of Vaasa) and Emeritus Professor Jacques Rebuffot (McGill University).

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Contents

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Writing in a second language – case studies dealing with the challenges faced and the strategies used by immersion students at secondary school

Abstract

This paper discusses writing in a second language from two perspectives. On one hand, I will analyse the problems that some immersion pupils at secondary school face when working with two writing tasks and the strategies that they use to enable them to continue with and complete the actual task. On the other hand, I will describe pupils´own experiences of writing in a second language and their thoughts about the kind of challenges they face when writing in a second language. The article focuses in particular on pupils who were having problems with reading and writing development when they were in the lower grades of primary school.

Key words: Swedish immersion, writing, second language learning, problems

Background

About seven years ago, I started a research project regarding immersion pupils with reading and writing problems. The overall purpose of this three-year case study (as documented in a doctoral thesis (Bergström 2002a) was to analyse the individual variation in written second language development in early Swedish immersion and to describe the nature of linguistic difficulties experienced by some weak learners who were having particular difficulties with their reading and writing development. One of the pupils studied had diagnosed dyslexia while the others were having difficulties in their early reading and writing development and were thus in need of additional remedial instruction in the opinion of their class and remedial teachers. The second-language learning of these immersion pupils was studied on an orthographical level and a textual level. The analysis was based on texts written by the weak learners and their classmates during their first years at primary school.

The results showed that the difficulties faced by those writers described as being weak by their teachers were primarily to be found on the level of orthography. As expected, writing in a second language seemed to be a real challenge for a pupil called Ville who had diagnosed dyslexia. As a result of his poor short-term memory and auditive powers of discrimination, his writing departed in many respects from normal written language. Since he spelled phonetically as a result of deficient automatization, the less phonetical second language (Swedish) caused more problems than Finnish, where spelling generally follows pronunciation. Immersion seemed, however, to have given this pupil the ability to communicate fluently in his second language. He didn't display any special difficulty in using Swedish orally or in creating texts in this language, nor did he seem disturbed by his orthographical difficulties when writing. The communicative manner of teaching had, obviously, had the effect that Ville and the other weak pupils involved were not shy about expressing themselves in a language that they did not fully master despite their writing difficulties. Immersion seemed to be propitious to them because the teacher in immersion encourages written production without focusing too much on formal correctness. The fact that the teacher does not expect pupils to be able to produce correct language in the early stages of school attendance could in this way make even poor writers feel capable of expressing their thoughts in written form. In this way, they would also be encouraged to practice writing more.

This kind of results and advantage of immersion pedagogy for pupils with special needs is well documented in immersion literature (see e.g. Bruck 1982; Demers 1994; Wiss 1987). In the literature, much attention has also been paid to individual differences among second language learners (see e.g. Wong Fillmore 1983) and to different second language learners´ individual learning strategies (for an overview of the research, see Chamot 2004). There is, however, a lack of longitudinal research regarding the problems encountered by immersion pupils with learning problems in the immersion programme and the longitudinal effects that the programme has on their second language learning. Also, little is known about how pupils experiencing difficulties in the programme themselves have coped with use of the second language as a medium for learning and in different school activities.

Objectives

This article is a case study of the individual differences in writing development among secondary school pupils. The individual differences among some of the weak writers studied in the lower grades are studied in this article from two new perspectives. Firstly, I will analyse the cognitive processes among these second language learners and their use of strategies when writing in a second language. Instead of studying final products, I will focus on the writing process to find out which aspects the learners are paying attention to and what kind of difficulties learners at different levels of writing proficiency have when writing in their L2. I am further interested in identifying the strategies used by the learners to overcome these problems and in finding out what kind of rules they have developed for how L2 functions. As in Chamot (2004), the strategies here are defined as the conscious thoughts and actions taken by learners in order to complete a task.

Secondly, I will describe pupils' own experiences of immersion education and language learning. I will focus on two pupils who in the lower grades of comprehensive school were regarded as being weak writers. I am interested in their thoughts regarding the use of L2 in reading and writing and regarding the possible effects that use of the second language has had on their learning. Although the pupils´ experiences of the immersion programme and their attitudes towards the L2 seem to be well documented in relevant literature (see e.g. de Courcy 2002; MacFarlane & Wesche 1995 and Södergård in this volume), few studies have focused on the attitudes and learning experiences of pupils with any degree of difficulty coping with the programme.

Cognitive processes and use of strategies when writing in a second language

Analysis of the cognitive processes and the use of strategies is based on material consisting of think-aloud protocols from two different writing tasks completed by immersion pupils in the eighth grade of secondary school. In other words, pupils were asked to put their thoughts into words while also working on tasks and their words and

comments were then recorded (see O´Malley & Chamot 1990: 86–97, for a discussion about the advantages and disadvantages of this approach). The learners completed the tasks individually with the test leader and they were allowed to use the language that they felt to be natural when reporting their thoughts. As already mentioned, the purpose of using this method was to find out which aspects learners at different levels of writing proficiency are paying attention to during the writing process and to identify weakness areas when writing in their L2. In addition, it is of special interest to identify strategies used by the learners to overcome the problems faced.

In the first writing task, pupils were asked to write a postcard to provide information for a Swedish guest/visitor (an author) on how to find the school. In the second task, pupils were asked to write a response to a question published in a letter to the editor of a magazine for young people. The pupils had to choose one of three short texts where young people write in brief about some problem they need help with and write an answer to the writer. The strategies found in the material are listed below:

Strategies

1. _____ *Restructures*

Constructs (and tests) a hypothesis

Repeats a chunk of language (a paradigm)

Tries to remember and apply a rule

Uses prior knowledge from other language contexts

Auditory monitoring (pays attention to how something sounds before making the decision)

Visual monitoring

Substitution by selecting an alternative expression

Self-evaluation by commenting on one´s performance/production/text

Self-evaluation by judging/commenting on one´s language ability

Uses a dictionary

Asks the test leader for help

Rereads the written instructions for the task

Searches for help with the language in the task paper

Guesses

Gives up

Results

As expected, analysis of the data revealed that learners had difficulties on different language levels when completing two writing tasks. They also seemed to favour different types of strategies to overcome the problems (see also e.g. Fagan & Hayden 1988 and O´Malley & Chamot 1990). In this article, I will present two different learners' ways of dealing with the tasks. One of these pupils is Ville, the boy with diagnosed dyslexia discussed earlier in this article. The other is a girl called Eveliina who is above class average according to her class teacher.

As the following extract (Example 1) from a think-aloud protocol shows, Ville is mainly dealing with problems on the orthographical level[1] when writing. It is, however, interesting to note that he is not paying as much attention to every word that he spells incorrectly. Instead, he pays attention, for example to some short words with a long vowel (e.g. the word *ha/have* in Example 1). He has problems deciding whether the long vowel should have two graphemes (as in Finnish) or just one grapheme. Instead of showing any signs of applying a rule or a hypothesis, he tries to solve this kind of problem by asking the test leader and by listening to how the word sounds. Since the actual Swedish word in Example 1 is not spelt in the same way as it is pronounced, the approach does not result in the correct spelling.

Example 1.

Ville says	Ville writes	Translation of the thoughts into words	Strategy
Du behöver inte haa skrivs ha...<u>hur skrivs ha</u>? *Va har du för alternativ?*	Du behöver inte	You don´t have to have <u>how do you spell have</u>? *What alternatives are there?*	12
En eller två aa...ha.	haa	One or two a....	
Du behöver inte ha sån hobby du inte vill ha. öö..öö..öö..och din pappa	son hobi som du inte vill haa.	You don´t have to have a hobby that you don´t want to have and your daddy	14, 6, 15
din pappa ska inte <u>velja välja..hur skrivs</u>...	Och din pappa ska inte välja	your daddy should not choose...how you spell....	
din hobby därför att alla	din hoby därför att alla	a hobby for you because everyone should have that kind of	14

| ska ha sån hobby som man vill själv ha. | ska haa son boby som man vil selv haa. | hobby that each one likes most. |

As Example 1 shows, Ville is still in the eighth grade of secondary school spelling most of the words phonetically. He seems, however, to be aware of some differences between his L1 and L2 and the fact that words (like *ha/have*) are not necessarily spelt phonetically in Swedish as in Finnish. The problem is, however, that Ville seems to overuse a limited number of strategies which are often inappropriate for solving the actual problem. In addition to using his ears for the language, he often either asks the test leader for help or guesses. When spelling the word *välja/choose,* Ville remembers that there are two alternative ways of spelling the phoneme /e/ (*velja-välja*). To solve this problem, as with the word *ha*, he goes back to the task paper to find out whether he can find the same word there (strategy 14). This time, unlike many other times, he is lucky and finds the same word there (in another context) and gets the correct spelling. He is, however, not interested in using other sources of information like the dictionary to support his spelling.

As mentioned earlier, Ville is not paying as much attention to all the words that he can obviously not yet spell automatically. He writes, for example, the word *själv* (*each one* or *self*) incorrectly *selv* with grapheme *e* instead of *ä* without paying any attention to the spelling of this phoneme as he did for the word *välja*. One possible explanation for why he doesn´t seem to pay any attention to the spelling of this word may be that the word also includes other insecure elements. He may regard the phoneme / ʃ / (at the beginning of the word) which may be spelt in many different ways as being difficult to analyse.

Example 2 reveals thoughts verbalized by a pupil (Eveliina) without writing problems. As in the case of Ville, Eveliina is writing an answer to a column where a girl needs some help with her father who insists that she has to go swimming instead of having other hobbies.

Example 2.

Eveliina says	Eveliina writes	Translation of the thoughts into words	Strategy
Kanske han tänker att du		Maybe he thinks that you	
har en möjlighet till att	du har en möjlighet att	have a possibility to	
	vinna världsmästerskapet	win the world championship	
vinna världsmästerskapet i framtiden...in the future e de framtiden eller framtidet?		is it framtiden or framtidet? [E is uncertain about the correct gender] in the future…think that I would	
i framtiden...tror att ja skulle sätta framtidet		write framtidet [E thinks that the word is neuter in gender] framtiden (future)…medeltiden (the Middle Ages)	2
framtiden..medeltiden *Varför nämnde du medeltiden?*		*Why did you mention the Middle Ages?*	5
För..öö..när ja har gått I språkbad så då ..öö..man lär ord så man kan/om ja skulle veta att medeltiden e en eller ett...en [uter] or ett [neuter]		Because…when I have been in immersion…then you learn words so that you can/if I would know that medeltiden (the Middle Ages) is [of gender according to how it sounds]	
att hur de låter..		then I would get it from there.	6
så skulle jag få det därifrån.		And it would sound strange	6
O sen det låter konstigt att		if it would be en tid, tiden, tider tiderna…[inflects correctly according to 3rd declension, uter in gender]	
om det skulle vara en tid, tiden, tider,tiderna...		the form tiderna… I think that it is not so…	3
de där tiderna…de tycker ja e inte så..		but if it was ett tid, tidet, tid, tiden…[inflects correctly according to 5th declension, neuter in gender]	
men om de var ett tid, tidet, tid, tiden		…hela tiden (all the time)…	3
...hela tiden...		I would write so, ett tid [neuter]	5,6
ja skulle sätta de, ett tid		if I didn´t have a dictionary	
om ja skulle inte ha en ordbok men..	Framtiden	tid (time)…it is en [uter].	11
tid...de e en.			

In the example above, Eveliina is insecure about how to inflect the noun *framtiden (future).* She expresses her insecurity about the gender but believes that the noun is neuter. She uses her prior knowledge from other language contexts by trying to re-member how another compound word with the same ending (*tiden/time*) *medeltiden* (The Middle Ages) has been used in the classroom. When I asked her why she mentioned the word *medeltiden,* she explains that in immersion you learn to use your prior knowledge and experiences of how similar words sound. Like many other pupils Eveliina often pays attention to how the words sound and is willing to rely on this strategy. Bearing in mind the strong position that oral language has in immersion, this is not very surprising. Eveliina is, however, also using many other strategies before making her final decision. Since she in the example above does not get enough help by thinking of another compound word with the same ending, she tries to inflect the word in two alternative ways to find out which alternative sounds more familiar. She however mentions that the form *tiderna* doesn't sound familiar. She also mentions the expression *hela tiden* (*all the time*) to back up her hypothesis. The last strategy that helps her to find the right solution (and that shows that the hypothesis she has about the gender is not right) is, however, use of a dictionary. The example here thus shows that even though the written output is correct it may be based on some misconceptions of the language (see also Kowal & Swain 1997).

Another main difference between the two pupils is that while Ville focuses almost entirely on orthographical problems when working with the two tasks, Eveliina stops to think about aspects on many different linguistic levels. She discusses the orthography (e.g. spelling of the phoneme /o/ in words n*å*got and beg*å*vad), gender (e.g. *en* or *ett sak/thing, framtid/future, mästerskap/championship*), morphology (e.g. how to inflect the noun *hobby*), vocabulary (what the words *ikinä/ever* and *mahdollisuus/chanse* are in Swedish) and use of prepositions. Eveliina is, however, not merely focusing on the formal aspects of the text but also spends a lot of time discussing appropriate style and content. An interesting result of this study is that Eveliina is paying much more attention to formal correctness when working on task 2 (writing an answer to a problem for publication in a magazine) than when working on task 1 (writing a postcard). In her

think-aloud protocol, she also expresses her opinion that formal correctness is important when writing a text for publication in a journal while it is content and style that are important when writing a postcard aiming to provide information for a guest.

The two examples thus show major differences in the writing process between the two pupils with clearly different abilities. The analysis shows that Ville, the pupil with dyslexia, is used to expressing himself in L2 and that he is able to use the language for different communicative purposes. At the same time he is, however, dealing with basic challenges regarding spelling that most pupils overcame during the first school grades (see e.g. Bergström 2002b; Nauclér 1989). The lack of automatization leads to the fact that not much capacity is left to focus on more advanced stylistic considerations (see also Høien & Lundberg 1999: 120–121). My study also confirms the results of many other researchers regarding the use of strategies among successful and less successful second language writers (see e.g. Green & Oxford 1995). While the pupil without writing problems, Eveliina, uses a combination of many different strategies, Ville relies on a few, often inappropriate strategies to overcome problems during the writing process.

Two weak learners´ experiences of immersion education and learning a second language

To complete the picture of L2 writing in the secondary school that use of the think-aloud method gives, I have interviewed learners of different levels and abilities and asked them how they react to reading and writing in L2. I was especially interested to find out about the problems faced by weak writers when writing in a second language and how they conceive that learning through a second language might have influenced their own progress at school. In the following section, I will concentrate on the experiences of two pupils who needed additional remedial instruction because of their problems with the written language in the lower grades. One of the pupils discussed is Ville whose writing process and strategies were analysed above. The other pupil Marko is a boy who was struggling with his early reading and writing development but who doesn´t have any diagnosed disability. Unlike Ville, he was also slow in his oral L2

development at primary school. He also had some attitudinal and motivational problems in kindergarten and at primary school (see also Bergström 2002a).

Ville´s experiences of learning and using the second language in immersion

Ville has very positive experiences of being involved in an immersion programme and of learning Swedish. He also considered learning to read and write in another language to be a natural thing that he had never questioned. Even though he thinks that it is easier to use Finnish when reading and writing, he said that he has never wished that he could be in a regular class where the pupils´ mother tongue is mainly used for reading and writing activities. He had also never wished that the teacher in the lower grades would have used the pupils´ mother tongue when teaching or giving instructions.

Ville tells me that he has received good proficiency in Swedish from the programme, although he is aware of his weaknesses especially in terms of spelling:

Example 3.
> "I can speak Swedish but grammar is not easy. When I write in Swedish, I always make a lot of spelling errors but they can still understand what I'm trying to say."

The comment above would suggest that Ville is not worrying too much about the spelling mistakes and that he is primarily focusing on content when using his second language. The following comment (in Example 4) reveals, however, that he feels that he has to pay more attention to formal aspects when using his second language than when using his first language Finnish and that he has to "think more" when writing in Swedish:

Example 4.
> "It is easier to read and write in Finnish because you know the words better in Finnish. When you write in Swedish, you have to think more. When I write in Swedish I also make a lot of grammatical errors and the words may come in the wrong order. It is also difficult to inflect words. You learn the words automatically when you have so much Swedish in immersion but the inflections do not come automatically."

Ville does not, however, consider using the second language to be an obstacle to learning school subjects which have been taught through this language. According to Ville, the writing problems and use of his second language as a medium of instruction have not had any influence on his results in subject matter because the focus in subject matter learning and tests has always been on content.

Example 5.

"It is more difficult to write essays than to write a test because when you write an essay you are expected to write correctly. In tests I don't think that the content of the answers suffered because I had to use Swedish. It would probably have been easier to write the answers in tests in Finnish but then I thought that it didn't matter that I made language errors...I thought that the main thing was for the teacher to understand what I wrote."

Ville also considers it important that immersion gave him the opportunity to learn the language in a concrete and communicative manner, which doesn't stress the importance of grammar too much. He comments that the grammar is difficult for him in any language but stresses that it is easy to learn languages in immersion. He would therefore also recommend the immersion programme to his younger sisters/brothers and would consider recommending the programme to his own children in the future. He also says that he would choose immersion if he could start school from the beginning. He thinks that he will use Swedish in his future job and considers it a possibility that he will marry a Swedish-speaking girl and speak Swedish to her. But even though he feels that immersion has given him good communicative competence in the second language, he is willing to choose optional subjects taught in Finnish at secondary school.

Example 6.

"I take optional subjects in Finnish because in Swedish you really have to think what is meant. E.g. in domestic science, the measures are difficult and you always have to think what is meant by a tablespoon."

In Example 6, like in many other comments, Ville mentions the extra demands that use of the second language puts on mental processes when dealing with cognitive tasks like writing or learning subject matter.

Marko´s experiences of Swedish immersion

Marko does not have any diagnosed reading and writing disability. According to his primary school teacher, he is a shy boy who is struggling in many respects. At primary school, he was slow to start using Swedish both orally and in writing. At the beginning of the programme, he was also showing signs of attitudinal problems and he was not interested in being at school. When I asked him what the advantages and disadvantages of immersion are, he answers:

Example 7.

"It is stupid that you have to use Swedish. It is too hard to speak and some words are difficult to understand...a good thing is that you learn Swedish well, at least better than if you were in a regular class."

Unlike Ville, he also mentioned that at times he would have wanted to switch to a regular class in the lower grades. When I ask him to specify the most difficult thing about using Swedish, he mentions difficulties with the written language:

Example 8.

"The writing, spelling...long words and double consonants are difficult. It is quite easy to write in Finnish but not all words in Swedish are difficult to spell...It is easier to understand English because you hear it so much on the television. To write in English is however just as difficult as writing in Swedish."

Like Ville, Marko stresses difficulties in writing and spelling. Marko also feels that it is easier to speak English than Swedish but regards writing as being difficult in both languages. When I ask him to compare his oral and written proficiency in Swedish, he says that he writes Swedish satisfactorily and that his oral Swedish is at the same level. According to his first comment (Example 7), he regards this kind of proficiency as something that he would not have been able to achieve in a regular class. He does not use Swedish outside school and he doesn't think that he will need Swedish in his future job. He may consider marrying a Swedish girl but not using Swedish with her. He would however recommend the programme to his own children in the future because of

the better results in language learning than can be achieved on an immersion programme.

Discussion

The study reveals some interesting aspects of immersion pupils' writing strategies as well as their own conceptions of writing in a second language. Even though a think-aloud method does not make it possible to observe all problems faced and strategies used during a writing process, it provides some important information regarding the thinking processes behind the final writing products.

The study indicates that Ville is still having major problems with spelling in the eighth grade of secondary school. It is also apparent that spelling places such demands on his working memory that not much capacity is left for considerations regarding content, style or formal correctness on other grammatical levels. In the interview, Ville also stresses the fact that he is forced to pay more attention to surface-level aspects when writing in his second language, Swedish, than when writing in Finnish.

Ville's think-aloud protocol also suggests that he is overusing a limited number of strategies to overcome problems encountered when writing. He is often using the task paper (providing written instructions for the tasks) and trying to find the correct spelling for difficult words there. Bearing in mind his short–term memory problems, use of this kind of strategy seems to be well motivated and appropriate. The problem is, however, that he doesn't have access to other strategies when the first strategy he uses does not work. Instead, he is forced to guess. As in many other studies on learning strategies, the more able learner in my study, Eveliina, employs a combination of many different strategies more effectively. She seems to be more able to employ cognitive and meta-cognitive strategies and she uses her prior knowledge and experiences from other con-texts much more often. Another interesting result is that Eveliina is clearly working in two different ways with two tasks depending on the different goals of the tasks.

But even though Ville has difficulties with formal aspects in second language writing, he is satisfied with his achievements and learning on the programme. He points out that, despite his dyslexia, he has been able to learn languages in immersion because of the fact that the programme does not stress too many aspects that learners like him have difficulties with. In the immersion programme, it is thus not necessarily the pupils with specific language-related problems who fail. As the interview with Marko shows, it may actually be the attitude and the pupils´ own conceptions about attending a school in their second language that is crucial for successfully completing the programme. To avoid the possible frustration that learners with writing problems may experience when dealing with two language systems it is, however, of major importance that the teacher helps learners to use strategies that are appropriate for each individual learner.

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[1] In the think-aloud protocol, the problems discussed by pupils are underlined. Comments from the test leader are marked in italics.

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CLIL and future learning

Abstract

This article focuses on Content and Language Integrated Learning (CLIL) in future foreign-language, plurilingual, and multicultural learning environments. The perspective is on pedagogy, particularly on general learning processes and content learning, not on language learning. It is also important to bear in mind that the aim of the article is not to compare CLIL with L1 or FL environments although it benefits from the studies that concern the differences between these environments. The aim of the article is to construct a portrayal of the requirements of the future CLIL learning in benefitting from the existing knowledge about learning. For this purpose, CLIL learning is first presented from three main perspectives: CLIL teachers' professional growth, key characteristics of CLIL environments, and CLIL learners' thinking and content-learning processes. Then the article introduces, on the basis of current knowledge of and research on learning, some expectations concerning future CLIL environments' ability to meet the needs of future education and working life in these three areas. The requirements are examined in terms of some essential features of future learning environments, such as supporting creative problem-solving processes, treating real-life problems, promoting active participation, training for individual development, and supporting networks and collective learning. These features guarantee achieving the three main goals of future learning: life-long learning, depth of understanding, and knowledge creation and enabling. Finally, the article aims at to offer some suggestions as to what might be essential in CLIL in the light of future learning needs.

Key words: content and language integrated learning (CLIL), future learning environments, life-long learning, depth of understanding, knowledge creation and enabling

CLIL in a changing world

Foreign-language and multicultural learning environments open vistas to an enlarging and changing world (e.g. Urry 2003). Because of social transition and the international needs of working life, the learning environments of today are developing towards pluri-linguality of a new kind (Common European Framework of Reference for Languages 2001; Hartiala 2000; Jäppinen 2002, 2005a, 2005b). They are affected, in a way different from anything before, by interactions between languages and cultures. Content and Language Integrated Learning (CLIL) unlocks one door to this unpredictable world. It has the potential to facilitate intercultural communication, internationalisation, and the mobility of labour, and help people to adapt to various social environments.

CLIL teachers' professional growth and expertise

The changing world is a big challenge for all teachers. This also concerns CLIL. Without competent CLIL teachers there will be no successful CLIL learning. CLIL teachers' professional growth should be based on two cornerstones: well-organised and effective teacher education, and professional growth in the sense of a growth of expertise. However, in Finland there is no official pre-service CLIL teacher training, only university courses or modules. Therefore, in-service training has a crucial role. Good CLIL teacher training should be based, according to a study by Hartiala (2000), on the teachers' own needs and wishes. Teachers emphasise in their education good practical arrangements and a meaningful schedule that suits in-service teacher training in addition to their regular job. They hope for real opportunities for effective co-operation and long-term networking. CLIL teachers want training that links theory and practice in a reasonable way. The issues covered should be topical and useful and taught by experienced trainers using appropriate methods.

Hartiala (2000) speaks about special CLIL expertise. It means the expertise that a CLIL teacher needs in a CLIL classroom. It is very multiform and includes both the common knowledge about teaching and learning and the knowledge related to the foreign language. This means that CLIL expertise includes teachers' theoretical and practical foreign-language competence. It involves the ability to understand the relationship between the foreign language being taught and the learners' mother tongue(s). CLIL expertise is knowledge about cultures related to the foreign language and its learners' mother tongue(s). It encompasses the ability to choose suitable contents to be taught through the foreign language and select and produce supportive materials. Methodological expertise and a deep understanding of learners' individual learning processes are also essential. Finally, CLIL expertise entails the ability to cooperate with various people and organisations associated with the foreign language taught. (Hartiala 2000; Jäppinen 2004.)

However, it is important to realise that because CLIL teachers' expertise is so multi-form, it develops gradually. It is unfair to expect trainees to acquire all aspects of this

expertise equally well. The process in which CLIL expertise is gained depends on many things: CLIL teachers' teaching experiences, their personalities, their individual circumstances and so on. Thus, CLIL teachers' expertise is progressive by nature.

Thinking and content learning in CLIL environments

CLIL environments are in many ways congruent with the other learning environments. However, according to the study of Jäppinen (2002), they have at least four key characteristics that distinguishing them from environments where instruction is given in the learners' mother tongue. First, there is a large Zone of Proximal Development (ZPD) (Campione, Brown, Ferrara & Bryant 1984; Vygotsky 1986; Rogoff & Wertsch 1984). That is, in order to be able to reach the upper limit of their learning potential the learners need a great deal of pedagogical help from their teachers and fellow-learners, such as extra explanations, special gesticulation and movement, or special features of spoken language to facilitate understanding. This is due to the large amount of unfamiliar vocabulary, new expressions and strange structures that the learner must grasp without explicit teaching. The second characteristic is a complex interaction between social and cultural factors related to two or more languages. The foreign language used opens a wide view to societies and cultures of other kinds, interpreted by the learners in very personal ways (e.g. Bruner 1996). The third characteristic is a learning process heavily related to discovery learning (Bruner 1971; Hakkarainen, Lonka & Lipponen 2000, 2004; Kuhn, Black, Keselman & Kaplan 2000). Situations associated with discovery learning manifest themselves in various and contradictory connections between the foreign language used and the learner's mother tongue, which the learner detects and uses in meaning making. The fourth characteristic is a development of the learner's foreign-language competence that resembles, in many respects, the development of her/his competence in her/his mother tongue. CLIL environments provide informal and natural language-learning opportunities because CLIL learners learn and acquire a foreign language in much the same way as they once learned their mother tongue (e.g. Baetens Beardsmore 1982; Baker & Prys Jones 1998; Cummins 2001; Swain & Johnson 1997).

Thinking and content learning in CLIL

A long-term study by Jäppinen (2002, 2003, 2005a, 2005b), carried out in 2001–2003 examined the thinking and content-learning processes of 335 CLIL learners attending public mainstream education (the whole age groups, without a selection) and compared them with those of 334 learners taught through their mother tongue, here Finnish. The CLIL learners, aged 7–15, were taught mathematics and science through English, French, or Swedish. The study covered comprised 12 schools in Helsinki, Tampere, and Turku, all in Finland, and 46 teachers. The focus was on how the learners exploited, in their thinking processes, the concepts and conceptual structures they had learned through the foreign language. It was found that CLIL environments had succeeded in offering the learners favourable conditions for thinking and content-learning processes. At a general level, no statistically significant differences emerged between the CLIL and other learners.

However, in a few single cases, for example, between the sub groups, some differences were discovered (Jäppinen 2005a, 2005b). The youngest learners had some difficulties with very abstract topics, such as spatial contents. Later, when their thinking processes had developed, using the foreign language in learning complex concepts and conceptual structures seemed to be an advantage because older learners managed better than the control group in situations where the learners had to compare different concepts and meaning schemes, detect and create links between concepts and meaning schemes, and hypothesise about consequences. This is, perhaps, due to the special and continual practice in classifying concepts and meaning schemes that CLIL learners get as they make comparisons between the semantic systems of two languages and two or more cultures. In summary, learning in CLIL environments proved to be initially more demanding than in environments where the mother tongue is the medium of learning. However, over time CLIL learners seemed to attain the necessary learning abilities. A demanding and language-enriched learning environment seemed to have a positive effect on the mainstream CLIL learners' thinking and content learning. Some other differences will be discussed later in the following chapters.

CLIL and the main goals of future learning

CLIL should prepare learners for the unpredictable working life of the future. What is, then, essential in future learning according to current research and knowledge? There is a general consensus among learning researchers on three central goals: *life-long learning, depth of understanding,* and *knowledge creation and enabling* (e.g. Bereiter 2002; von Krogh, Ichijo & Nonaka 2000; Nonaka & Teece 2001; Scardamalia 2001; Stehr 2001). These will be discussed below.

CLIL and life-long learning

It is important to realise that all teachers and learners must both be seen as life-long learners (Reeves, Cartwright & Edwards 2002). For teachers this means a continuous opportunity to develop their individual expertise in the sense of professional growth and coherent and functional pre- and in-service training. For learners it means an opportunity to proceed along a personal learning path from kindergarten to working life, and access to a learning environment that concentrates on the development of thinking.

As Ericsson and Charness (1997) emphasise, enabling expertise is an important element of life-long learning (cf. Senge 2003: 231–238). Therefore, CLIL learning environments should be seen as an ever-changing process of life-long learning, especially from the point of view of enabling expertise. Nyyssölä and Hämäläinen (2001) point out that life-long learning is a multidimensional process. They have identified 11 life-long learning objectives, of which the most essential for CLIL are enlarging the learning environment, enhancing teaching competence, guaranteeing the quality of education, developing learning skills, and meeting the challenges of the information society.

CLIL and depth of understanding

Deep understanding is needed everywhere in future working life. According to Bereiter (2002), understanding is a relationship between the person who knows and the target of understanding. Understanding involves mental adaptation to what is going on in one's learning environment (Bereiter 2002: 52–54). Peng and Akutsu (2001) similarly argue that understanding should be visible in the learner's mentality. It is a psychological attitude, a result of a reaction to new information.

Deep understanding was one of the focuses of the Jäppinen study (2002, 2003, 2005a, 2005b). A comparison of learning how to master single concepts and learning how to handle conceptual structures found that the mother-tongue and foreign-language learning environments used in the study were equally conducive to either. When the thinking processes involved making connections between concepts and conceptual structures, CLIL learners had an advantage. The youngest learners, who were taught through Finnish, were superior in problem-solving when estimating the consequences of the relevant actions. However, the older CLIL learners had overtaken the control group or even gained an advantage over them in thinking processes of these kinds. These results indicate that, if care is taken to foster teachers' expertise and the development of appropriate thinking processes and content learning, future CLIL has good potential to prepare learners for complicated and unpredictable working-life contexts.

CLIL and knowledge creation and enabling

Knowledge is about context, that is, about an ability to modify a problem and select, interpret, and integrate information into a useful body of knowledge (von Krogh et al. 2000: 7; Teece 2001). Current research on learning has begun to emphasise knowledge creation and enabling instead of knowledge management. There is a growing consensus that as one's experience grows, dealing with and solving real-life problems becomes increasingly a matter of knowledge creation and production (Bereiter 2002; von Krogh

et al. 2000; Nonaka, Toyoma & Konno 2001; Stehr 2001; Tynjälä 2004). Particularly, the fourth key characteristic of CLIL environments is heavily related to real-life experiences. Thus, CLIL may be in the front line of equipping learners with crucial knowledge creation and enabling skills.

One of the interesting questions in CLIL concerns the ways in which using a foreign language as a learning tool affects knowledge creation and enabling. Jäppinen (2002, 2003, 2005a, 2005b) showed that CLIL promoted it. The CLIL and mother-tongue learners were equal in addition, subtraction, and multiplication, in managing the base 10 numeral system, in calculating with decimals, fractions, and percentages, in solving equations and when handling weather phenomena, the atmosphere, and climatic issues. The CLIL learners had an advantage in division, dealing with the circulation of water and rain and the handling the quality and origin of wind. The youngest CLIL learners had superior skills in dealing with numbers. It was only in the handling of abstract contents that the youngest mother-tongue learners had an advantage over CLIL learners.

Essential features of future CLIL environments

CLIL environments' ability to support creative problem-solving processes manifests itself as, for example, the learners' and teachers' ability to engage in *dialectical and creative thinking* and develop *creative expertise*. This means, amongst other things, that the learning environment encourages users to cope with conflict, muddle, or unpredictable situations. The learner's mentality is manifested as either dialectical or linear thinking (e.g. Kallio 2001; Peng & Akutsu 2001). Both are necessary and functional processes in the right contexts. However, dialectical thinking is needed when the learner has to face conflict and ambiguity. Nonaka and Teece (2001) explain how dialectical and creative thinking exceeds normal boundaries and integrates apparently contrary concepts. As defined by Nemeth and Nemeth (2001), in a creative process a person thinks and associates in an unusual way, sometimes even against the facts. Here, thinking is critical and independent. It is an aspect of such thinking that the learner

knows what and how s/he knows or could get to know (see also Duffy & Cunningham 1996; Kallio 2001).

Clearly, the ability to think dialectically is essential in CLIL. CLIL places learners in a large number of ambiguous and inconsistent situations in the sense of facing them with two or more semantic systems, expressions, vocabularies, and structures and with two or more cultures. These factors generate an exceptionally large number of situations which the learner may be able to handle if s/he can think dialectically and creatively.

Another manifestation of a learning environment's ability to foster creative problem-solving processes is creative expertise (cf. Bereiter & Scardamalia 1993). In CLIL environments this is seen as cognitive flexibility as the teacher and the learners perceive the learning environment as continuous, flexible, interactive, multiform, and provisional (Feltovich, Spiro & Coulson 1997). Nemeth and Nemeth (2001) emphasise that creative expertise demands individuality and independence, qualities that were, for example, among the key points of CLIL teachers' professional growth in their process of acquiring CLIL expertise.

Dealing with real-life problems in CLIL

Dealing with real-life problems brings the learner closer to new kinds of learning, such as *processes resembling the way in which research teams work* or a greater focus on *context-dependent and situated learning* (Bereiter 1997, 2002; Cummins 2001; Clancey 1997; Duffy & Cunningham 1996; Gergen 1995, 1999; Hakkarainen et al. 2000, 2004; Henning 2004; von Krogh et al. 2000; Kuhn et al. 2000; Scardamalia 2001). Coping with real-life problems becomes increasingly a matter of knowledge creation (e.g. Tynjälä 2004: 188–189). This process is closely related to the extraction from theory and practice of a single integrated whole. Bromme and Tillema (1995) emphasise how important it is, in life-long learning, to be able to connect theory and practice, for example as a part of the development of expertise (cf. Tynjälä 2004).

Theory and practice are connected when learners work like research teams. This is not quite the same thing as collaborative knowledge building but something more (Bereiter 2002: 20, 219). Scardamalia and Bereiter (2003) explain that here ideas are treated as real things, as objects of research and development in their own right. The ideas are available to the whole community in ways that allow them to be discussed, integrated, observed, corrected and also rejected. The resemblance with team research is seen in the process of knowledge encapsulation, the continuous application of knowledge in the context of practical experiences. This means theorising practice and particularising theory (Tynjälä, Välimaa & Sarja 2003). This happens also in CLIL when content and language elements are linked, especially through the large ZPD and discovery learning.

Future learning environments should foreground context-dependent and situated learning. Knowledge is a construction of reality, not abstract or universal truth (von Krogh et al. 2000: 6). It is, according to Clancey (1997), about a person's ability to engage in action and develops through cultural commitments (cf. Duffy & Cunningham 1996: 179). Knowledge develops and gains its value through action. Gergen (1995, 1999) sums up that knowledge is socially constructed, that is, socially oriented and formed. In all learning environments but particularly in CLIL, learning processes are inherently context-dependent and situated, as the four key characteristics of CLIL environments indicate. Learning a content through a foreign language is heavily related to everyday life contexts and cultural issues. This is seen in, for example, the development of CLIL learners' foreign-language competence, a process that parallels, in many respects the development of their mother tongue, and in a more complex interaction between social and cultural factors. These features should be emphasised and given more attention in future CLIL environments.

Promoting active participation in CLIL

Active participation is closely related to the possibility of *uncovering and sharing tacit knowledge* in social-dialectic activities and to the learning environment's ability to *provide tools for active participation* (e.g. Bereiter 2002; von Krogh et al. 2000;

Nonaka & Teece 2001; Scardamalia 2001). How to put this 'mysterious' tacit knowledge identified by Polanyi (1966) to use and make it explicit has become a crucial question in discussions about future learning.

Tacit knowledge cannot be apprehended through documents or videos. It is apprehended and turned into explicit knowledge through direct observation, narration, comparison, and shared action (von Krogh et al. 2000). Uncovering tacit knowledge is thus a context-dependent process manifested as social-dialogical activities, such as conversation (e.g. Bereiter 2002; Cummins 2001; Henning 2004; von Krogh et al. 2000; Kuhn 2000; Scardamalia 2001). This idea emphasises discussion as a central factor in sharing tacit knowledge. In CLIL, discussion must involve that teachers check that content and the foreign language are being successfully learned and guarantee the favourable development of thinking. Discussion is essential in all teacher education, included CLIL teacher training, as a means of ensuring the growth of the trainees' expertise (Hartiala 2000: 124–127). However, it seems that in many of today's CLIL environments discussion-centred actions are less common that they should and could be.

Unless people are able to share their tacit knowledge in social-dialogical activities, it will remain hidden. Therefore, suitable tools for sharing it must be available (Duffy & Cunningham 1996: 184). Tynjälä (2004: 179–180) speaks about mediated tools. According to her, these tools have an important role in the development of expertise. In CLIL, the foreign language itself is one of the tools making active participation possible (Jäppinen 2002, 2005a, 2005b). Egan (1997: 207) argues that the language used in instruction modifies actions in the sense of modifying learners' metaphors, analogies, rhythm, images, narrative structures and so on (see also Jones & Brader-Araje 2002; Wertsch 1991). Different forms of discussion and communication should therefore be increasingly used in future CLIL environments.

Training for individual development in CLIL

Training for individual development includes, amongst other things, *discovery learning* and *professional development* (e.g. Hakkarainen 2000, 2004; Hartiala 2000; Kuhn et al. 2000; Tynjälä 2003). These factors are closely related to each other, as Duffy and Cunningham (1996: 182–183) and Tynjälä (2003: 99–100) have shown. These researchers argue that discovery learning means, ultimately, training for individual development and life-long learning. Hakkarainen, Lonka and Lipponen (2004: 293–294) stress also the progressive nature of discovery learning. According to Kuhn, Keselman and Kaplan (2000: 496), discovery learning involves a method that encourages students to plan their studies, gather information, analyse data, and construct evidence. Discovery learning is linked with handling real-life problems and with active participation because it includes discussion about what evidence was really found. In other words, the learners build up and argue a theory. This viewpoint is very near to the previously observed resemblance with team research.

Discovery learning has already been established as a conducive factor in today's CLIL environments. Its role should, however, be linked more closely with the goal of life-long learning as regards both learners and teachers. CLIL teacher training is under-valued today. It should be seen as a crucial element in ensuring that CLIL environments will be able to fulfil the requirements of future learning.

Supporting networks and collective learning in CLIL

The world is becoming more and more complex. Supporting networks and collective learning are ways of facing this reality. This is seen in, for example, *microcommunities* and the *creation of collective knowledge* (Nonaka & Teece 2001; von Krogh et al. 2001). Microcommunities are small groups of 5–7 people within a community. Their members share what they know and have common values and goals. Microcommunities are crucial mediators of tacit knowledge. This is a matter of socialisation, that is, turning

one person's tacit knowledge into another person's equally tacit knowledge. (Nonaka & Teece 2001: 16–19; von Krogh et al. 2000: 5, 125). Diversity of sociocultural elements has been one of CLIL environments' key characteristics. In future CLIL environments, this aspect should be seen from a new perspective. Smaller learner groups should be used in a new way to promote networks and collective learning. This makes demands on instructional planning and implementation, for example when organising group work and using assistants, such as native speakers or other members of teaching staff.

Creating collective knowledge requires, argue Bereiter and Scardamalia (2003), that all members of the community contribute to the promotion of knowledge creation and enabling. According to Gergen (1999) and Wertsch (1991), there are relationships, beyond communal processes, that precede intelligent action. These relationships are determined by culture and history; they are the origin of sociocultural emphases. When we describe or explain things we are creating the future. For this process we need language. Language is the main element of our actions and the generator of social life.

All the above arguments put CLIL in an important position due to its special socio-cultural emphasis. CLIL learners are able to influence future working life if learning in CLIL environments involves language-enriched deep understanding, knowledge creation and enabling and life-long learning unfolding through context-dependent social and individual processes (cf. Henning 2004).

Discussion

When studying CLIL in the light of future learning needs, all aspects, mentioned above, should be kept in the mind: the growth of teachers' expertise, the quality of thinking and content learning, and the development of CLIL learning environments. For studying the future needs of CLIL, all CLIL environments are important. However, it is reasonable to focus on those environments where there is a close link with working life, that is, on higher and vocational education. There is also a great lack of research on these areas. It is important to find out how higher and vocational education support deep under-

standing, the creation and enabling of knowledge, and life-long learning as supporting creative problem-solving processes, treating real-life problems, promoting active participation, training for individual development, and supporting networks and collective learning.

Hence the research project on Plurilingual and Multicultural Learning Environments and the Needs of Working Life has started at the Institute for Educational Research, University of Jyväskylä. The study seeks to answer the following questions: What are the essential features of future learning found in plurilingual and multicultural higher and vocational education and working life? What are the ways in which these environments are congruent with or differ from each other with respect to the essential features of future learning? How should plurilingual and multicultural learning environments in vocational and higher education be developed so as to achieve a better fit with the requirements of working life? Answers to these questions will produce crucial knowledge about CLIL environments' ability to respond to the challenges of the future.

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Form-Focused Instruction in Immersion Classrooms

Abstract

This paper presents a comparative analysis of five quasi-experimental studies that investigated the effects of form-focused instruction on areas known to be difficult for second language learners of French in immersion classrooms in Canada. The comparison suggests that effective form-focused instruction in immersion contexts, at least with respect to interlanguage features that have reached a developmental plateau, includes a balanced distribution of opportunities for noticing, language awareness, and controlled practice with feedback. Less effective instructional options overemphasise negotiation for meaning in oral tasks where message comprehensibility and communication strategies circumvent the need for learners to move beyond the use of interlanguage forms.

Key words: immersion, form-focussed instruction

Introduction

My own experience as a French immersion teacher spanned a decade, beginning in 1982 at a school in Toronto. I clearly remember having to invest a great deal of energy into trying to understand the nature of my students' interlanguage development in order to implement appropriate teaching strategies that would help them maintain their confidence in using French while improving their accuracy.

In those early days of immersion, especially in the 1970s and early 1980s, the principles underlying immersion pedagogy were quite straightforward. Students' second language acquisition was expected to parallel and be similar to their first language acquisition. Second language learning was thought to be primarily incidental, without the need for any explicit attention to language. This incidental approach to language learning was found to lead to high levels of comprehension skills as well as fluency and confidence in second language production. This incidental approach also resulted in persistent shortcomings in grammatical accuracy in immersion students' interlanguage even after years of immersion education. This leveling-off effect has been explained by the fact

that many language features, such as certain verb tenses, occur only minimally in classroom discourse, whereas other features occur frequently but lack saliency in classroom discourse (e.g. Allen, Swain, Harley, & Cummins 1990; Swain 1988). Researchers now underscore the importance of integrating form-focused instruction into regular subject-matter instruction to allow students to notice these otherwise infrequent or nonsalient features. According to Rod Ellis (2001: 1–2), form-focused instruction is defined as "any planned or incidental instructional activity that is intended to induce language learners to pay attention to linguistic form."

As an immersion teacher in the 1980s, I was not yet aware of any research on form-focused instruction. Instead, I continued to hear and to read that target language accuracy would simply develop over time, as long as the classroom was communicatively rich enough. The writings of Stephen Krashen were influential in telling us that grammar instruction was virtually useless and perhaps even harmful (e.g. Krashen 1982, 1985). This meant that many of us who taught grammar did so covertly, behind closed doors.

My experience as an immersion teacher led me to believe that Krashen was categorically wrong in suggesting that interlanguage errors required no instructional focus, because they would simply disappear over time. My students had been in immersion for 8 years, so I wondered how long it could possibly take to sort out some fairly basic grammatical subsystems. At the same time, however, I thought he might be right in questioning the effectiveness of traditional grammar teaching. When I did try to focus on language with my students, I did so in fairly traditional ways in decontexualized grammar lessons, not yet knowing much about form-focused instruction. Yet my students did not seem able to readily use in spontaneous language production the grammatical knowledge they gained from these grammar lessons, although they did seem able to put their knowledge to use on grammar tests. This has since been described in the psychology literature as transfer-appropriate learning. This means that language features learned in isolated grammar lessons may be remembered in similar contexts (e.g. during a grammar test), but hard to retrieve in the context of communicative interaction. Conversely, language features noticed during communicative interaction may be

more easily retrieved in communicative contexts (Lightbown 1998; Segalowitz 2000). Form-focused instruction is therefore generally considered most effective when embedded in communicative contexts, and is thus clearly distinguished from decontextualized grammar lessons.

Although many researchers now agree that some type of form-focused instruction is beneficial, there is less agreement about the most effective types of form-focused intervention. Some SLA theorists, such as Long (1996) and Krashen (1994), still downplay analytic and explicit approaches to form-focused instruction in favor of more implicit and incidental language instruction. However, reviews of empirical studies, such as those by Norris and Ortega (2000) and Spada (1997), show that explicit attention to form in communicative contexts is more effective. Similarly, Ellis (2002) and Lightbown (1998) have both questioned whether or not focus on form must take place only during communicative interaction.

Theoretical approaches

Before comparing various form-focused interventions, I want to add a theoretical perspective to form-focused instruction and its effects on interlanguage development, by contrasting two well-known theoretical approaches to the study of second language learning: the interaction hypothesis and cognitive theory.

According to the Interaction Hypothesis, conversational moves used to negotiate meaning are hypothesized to provide learners with a primary source of target language data in ways that benefit language development (Long 1996). Early descriptions of immersion drew extensively on this theoretical orientation, suggesting that language learning in immersion was primarily driven by interaction and the negotiation of meaning. However, there is still little direct evidence that conversational moves used to negotiate meaning actually drive second language development forward by effecting changes to the underlying interlanguage system. Instead, many second language acquisition studies have only been able to demonstrate that these conversational moves

provide learners and their interlocutors with a useful set of communication strategies that facilitate comprehension (e.g. Pica, Young, & Doughty 1987). Skehan (1998) argues that instructional activities that serve primarily to induce learners to rely on communication strategies may lead them to bypass target forms and to use inter-language forms that are more accessible. He puts into question the role of negotiation for meaning insofar as it aims to achieve mutual comprehensibility, at the expense of moving second language development forward in terms of formal accuracy and complexity.

Skehan (1998) instead draws on cognitive theory to explain second language development. Cognitive theory describes second language learning as the acquisition of complex cognitive skills, involving a gradual change in knowledge from declarative to procedural representations stored in memory (Anderson 1983, 1985). Declarative knowledge is static information such as historical or geographical facts encoded in memory. Procedural knowledge is knowledge about how to do things, including the ability to apply rule-based knowledge to cognitive operations such as problem solving, as well as to motor operations such as those involved in riding a bicycle or typewriting. In the case of language, declarative knowledge refers to knowledge of language items, such as word definitions and rules, whereas procedural knowledge refers to knowledge about how to perform cognitive operations, such as producing language online by quickly accessing items stored in memory (DeKeyser 1998, 2001).

The transformation of declarative knowledge into procedural knowledge involves a transition from controlled processing to automatic processing. Controlled processing requires a great deal of attention and use of short-term memory, whereas automatic processing operates on automatised procedures stored in long-term memory (Shiffrin & Schneider 1977). The transition from controlled to more automatic processing results from practice and feedback. In the absence of feedback or other types of appropriate instructional intervention, interlanguage representations can also become automatised procedures stored in long-term memory. This explains why immersion students' grammatical development appears to plateau prematurely. And this is where form-focused instruction comes into play.

Studies of form-focused instruction

As the basis of my talk, I have selected a set of five studies of form-focused instruction conducted in French immersion classrooms over the past 15 years. I hope to illustrate how immersion pedagogy and its theoretical underpinnings have evolved. I also hope to reveal which aspects of form-focused instruction appear most effective for moving language development forward.

To compare the form-focused instruction across these five studies, I will draw on cognitive theory to characterise form-focused instruction as instruction that emphasises noticing activities, metalinguistic awareness, and production practice. Noticing activities aim to effect change towards more target-like declarative representations of the second language, while awareness activities generally serve to consolidate the restructuring of rule-based declarative representations. Production practice then provides learners with important opportunities to proceduralise their declarative knowledge of emerging target-like forms.

The five classroom studies investigated the effects of form-focused instruction on features known to be difficult for second language learners of French. The studies were conducted across various grade levels (2, 5, 6, 7, 8) in urban schools in or near the cities of Vancouver, Toronto, and Montreal. The five studies span a period of 15 years, from 1989 to 2004, and involved almost 1200 students in 49 French immersion classrooms. The studies include Harley (1989), Day and Shapson (1991), Lyster (1994), Harley (1998), and Lyster (2004). I selected these five studies because they are often grouped together as evidence for the effectiveness of form-focused instruction, yet they were are not all equally effective with respect to actual learning outcomes. So, I became interested in discovering what it was about the pedagogical treatments in each study that contributed to the different outcomes.

The five studies are what we call in research intervention studies with a quasi-experimental design. Intervention studies compare at least two different groups of students: an experimental group that receives a special form-focused pedagogical treat-

ment, and a comparison group that continues with its regular immersion program. Pre-tests are given to all students in both experimental and comparison groups just prior to the pedagogical treatment, and then the pedagogical treatment (the form-focused instruction) is administered only to students in the experimental group, usually for about 10 or more hours spread over a period of 5 to 8 weeks. At the end of the instructional period, immediate post-tests are administered to all students. Then, several weeks later, delayed post-tests are administered to all students to assess the extent to which they maintained what they had learned over time. Intervention studies allow us to determine whether regular content-based instruction is sufficient for promoting language development, or whether form-focused instruction can play a significant role in leading to more substantial improvement. Comparisons across intervention studies then help us to understand what types of pedagogical intervention appear to be most effective.

For each study, I will describe the types of pedagogical activities used, and then describe the learning outcomes. Normally, I would also take time to explain the language learning problem, to make it clear why the particular language features were selected as targets. But because this requires knowledge of the French language, I will spare the linguistic details and simply state that the linguistic targets of form-focused instruction must be selected, not arbitrarily, but rather for specific reasons. It's important to note that not all language features require the type of instructional emphasis I am about to describe, because many language features are indeed learned incidentally. The language features targeted in these studies, however, are not learned incidentally, generally because they differ from the students' first language or lack prominence in the discourse of subject-matter instruction. The target features in these studies include: perfect and imperfect past tenses; the conditional mood (to express hypothetical meaning, similar to *would* in English); second-person pronouns (*tu/vous*); and grammatical gender (why nouns are masculine or feminine).

I need to acknowledge that the selected target features are from such different linguistic domains that these linguistic differences might have caused the differences in learner outcomes. For example, the functional distinctions expressed by the perfect and imperfect past tenses, as well as the hypothetical meanings expressed by the conditional

mood, are arguably much more complex than the ostensibly binary distinctions apparent in grammatical gender and second-person pronouns. To level the playing field for the sake of comparing these studies, however, I suggest instead that grammatical gender also constitutes a relatively complex subsystem, which is not simply binary in nature when one factors into the equation several hundred noun endings as well as the multiple effects that grammatical gender has on morphosyntax within and across sentences. Even the learning of second-person pronouns in French does not entail simple binary choices when we consider: first, the complexity of social variables that need to be taken into account; second, the use of the singular pronoun to mark indefinite and even plural reference in classroom discourse; and third, the effects of pronoun choice on morpho-syntax, again within and across sentences.

Study 1: Harley (1989)

Harley (1989) conducted a study in immersion classrooms to determine the effects of form-focused instruction on the use of perfect and imperfect past tenses in French. Some of the instructional activities involved reading a legend about werewolves, working in groups to create new legends, playing language games, and creating albums of childhood memories. The creation of childhood albums was the main activity, which required students to recount various childhood memories, both orally and in writing along with authentic photographs brought from home, while using the two past tenses appropriately.

Students were assessed on three measures: a cloze test, a written production task, and an oral production task. Immediate posttest results revealed benefits on the cloze test and the oral task for the experimental group, but no significant differences on the written production task. Three months later, on the delayed posttest, no significant differences were found between the groups on any of the measures, in spite of the 12 hours of instructional activities.

Study 2: Day & Shapson (1991)

Day and Shapson (1991) conducted an intervention study to test the effects of form-focused instruction on the use of the conditional mood in French. The thematic context involved the planning of an imaginary space colony and thus integrated concepts from the science class. Students were asked to play the role of ecologists, and to design a space station that would recreate a natural environment where space pioneers would be able to settle. The objective was to provide students with a context for using the conditional to express possible yet uncertain outcomes in the future. A cooperative-learning approach was adopted to maximize student interaction and to ensure the use of the conditional in communicative situations. In addition, every lesson began with a language game or exercise that served as a reminder to students of the forms and functions of the conditional.

On immediate posttest measures, the experimental group demonstrated significant gains on a cloze test and a written composition, but not in oral production. Students maintained the significant gains on the composition and cloze test at the time of delayed posttesting 11 weeks later, confirming that no gains were made in oral production, even after 17 hours of instructional activities.

Study 3: Lyster (1994)

Lyster (1994) set out to measure the effect of form-focused instruction on immersion students' sociolinguistic competence, focusing specifically on their use of second-person pronouns in formal and informal contexts. The instructional unit included the following types of activities:

- Explicit comparisons of various speech acts in formal and informal contexts;
- Role plays with peer feedback in contexts contrived to be either formal or informal;
- Structural exercises highlighting verb inflections;
- Analysis of second-person pronouns in dialogues extracted from a novel;
- Comparison of formal and informal letters and invitations;

- Creation of formal and informal letters and invitations.

Test results showed significant improvement, both in the short and long-term, in students' ability to accurately use second-person pronouns in formal contexts in both written and oral production tasks. Their overall awareness of sociolinguistic appropriateness, as demonstrated by their performance on multiple-choice tests, also improved significantly over time.

Study 4: Harley (1998)

Harley (1998) conducted a study with young 7-8-year-olds, using form-focused activities designed to draw children's attention to noun endings that predict grammatical gender. Each student created two illustrated dictionaries (one for masculine words and the other for feminine words) and labels were prominently displayed around the classrooms to identify the names of objects along with their gender-specific determiners. In addition, the treatment incorporated a series of language games, including 'I Spy', 'Simon Says', 'Concentration', 'Bingo', and 'My Aunt's Suitcase', all of which were designed to provide opportunities for practice in associating grammatical gender with noun endings.

The study demonstrated that students from the experimental classes made significant long-term progress as demonstrated by 3 of the 4 measures (two listening tasks and an oral picture description task). The only measure that did not reveal significant improvement was an oral task requiring students to identify the gender of low-frequency unfamiliar nouns.

Study 5: Lyster (2004)

Building on Harley's (1998) study, I conducted a classroom study at a higher grade level with 10–11-year-old students, focusing on grammatical gender. The instructional unit was designed around the children's regular curriculum, and contained simplified versions of texts found in their commercially produced materials. Typographical enhancement was used to highlight, in bold, the endings of target nouns embedded in these texts. Students were asked to fill in the missing gender-specific article before each

noun by checking its gender in the original text. Students were then asked to classify target nouns according to their endings and their gender, and to induce the rules governing gender attribution. Some of these tasks revolved around the students' history program, while others pertained to their science program.

This study was designed to examine not only the overall effects of instruction, but also the effects of different types of feedback. In addition to the comparison group, then, there was not just one but rather three experimental groups, each receiving the same instructional unit, but each exposed to a different oral feedback option: either recasts, prompts, or no feedback. Recasts are defined as an implicit reformulation of the students' nontarget utterance, whereas prompts are feedback techniques that push learners to self-repair without providing them with the target form: for example: clarification requests (*Pardon*?) or repetition of error (*He goed?*).

Four tests were administered immediately following the instructional unit and then again two months later, for a total of eight posttests. Results revealed that all three treatment groups demonstrated significant long-term improvement on all but one measure at the time of delayed posttesting, but at least showed short-term improvement on this measure at the time of immediate posttesting. Prompts proved to be the most effective type of feedback, with the prompt group distinguishing itself as the only group to significantly outperform the comparison group on all eight measures.

Discussion

To summarize, the instructional treatment targeting two forms of the past tense in Harley's (1989) study yielded short-term improvement on two of the three measures, but no long-term significant improvement on any measures. Form-focused instruction on the conditional mood in Day and Shapson's (1991) study yielded short- and long-term significant improvement in written production, but none in oral production. In contrast, the other three studies on second-person pronouns and grammatical gender generally yielded more positive results.

I begin the comparison with Harley's study on the functional distinctions between two past tenses. Harley stated that one of the main objectives of the instructional unit was to provide "more opportunities for students to express these functions in the realization of interesting, motivating tasks" (1989: 335). The main communicative activity involved the creation of childhood albums. This activity was indeed interesting and motivating, so much so that Harley reported that teachers and students alike seemed to overlook the linguistic focus. Overall, the instructional treatment may have overemphasised production activities at the expense of more activities promoting noticing and meta-linguistic awareness. In fact, it was found in the end that, not only did students have difficulty distinguishing the functional distinctions of these two tenses, they had not mastered their formal characteristics either. In cases like these, more meaningful content-based interaction may not be what immersion students need to be pushed in their interlanguage development.

Similarly, Day and Shapson (1991) described the principles on which their instructional treatment was based as follows:

1. integration of second-language teaching and content teaching;
2. classroom interaction characterised by negotiation of meaning;
3. curriculum study that is intrinsically motivating.

I would argue that in both the Harley and Day and Shapson studies the emphasis on negotiation of meaning, along with intrinsically motivating content-based activities, is unlikely to have pushed students to notice and to use the target verb forms more accurately. Some of my own classroom observation studies have shown that meaningful interaction related to content is typical of immersion classroom discourse. Therefore, the main thematic activities in the Harley and Day and Shapson studies may not have created contexts that were sufficiently different from other immersion activities. By focusing students on meaningful interaction and motivating content, the instructional units may not have drawn learners' attention to linguistic accuracy any more than is typically the case, and, furthermore, may not have pushed students to actually use the target forms in oral production. For example, Day and Shapson reported having observed a tendency during the oral tasks for students to use the present tense as they

interacted together in groups, avoiding the conditional and thereby decreasing opportunities to use conditionals in a meaningful context. I would suggest that the task demands did not really create an obligatory context for using conditionals to express hypothetical meaning. Learners negotiated their plans for a space colony during face-to-face interaction and then literally designed a model of the colony, thereby situating the task in the here-and-now. In other words, there was nothing hypothetical about the plan, because students actually designed it. What was hypothetical was whether or not the plan would be selected as the winning design that would be put into operation. Thus, the tasks lacked linguistic constraints requiring students to actually use conditionals to complete the oral tasks.

Throughout the instructional units in these two studies, activities promoting noticing and metalinguistic awareness were given less emphasis than production activities and, furthermore, the production activities emphasized communicative meaning-based practice much more than controlled practice. I would argue that more opportunities for noticing and metalinguistic awareness, in addition to controlled practice and provision of feedback, would have helped learners in these two studies to restructure interlanguage representations and proceduralise more target-like uses of tense and aspect. I say this because of the more balanced distribution of activities promoting noticing, metalinguistic awareness, and controlled practice in the other three studies, all of which demonstrated more robust changes to students' interlanguage.

For example, in Lyster (1994), noticing activities required students to classify utterances as either formal or informal; awareness tasks then required them to compare language features that are characteristic of either formal or informal utterances; and controlled practice activities with peer feedback engaged students in various role plays in which they alternately addressed either a friend or an adult stranger. In Harley (1998), noticing activities drew students' attention to nouns with gender-specific articles on identification labels displayed around the classroom; awareness activities required students to each create their own gender-specific dictionaries; and controlled practice activities required students to recall and associate nouns with similar endings in games such as

'Concentration' and to associate gender-specific articles with target nouns in various games such as 'Bingo' and 'My Aunt's suitcase'.

As you can see, there is nothing strikingly innovative or novel about these activities and this makes me feel the need to apologize for not being able to conclude with recommendations for more cutting-edge innovation in immersion pedagogy. I admit to being surprised myself by these results – this is not what I expected to find in reviewing these studies. I expected to find that the most interesting and engaging activities would be the most effective. I'm the first to acknowledge how much I appreciate the design of the activities surrounding childhood memories in Harley's (1989) study, and the activities surrounding the creation of a futuristic space colony in the Day and Shapson (1991) study. In fact, in my university teaching I have often upheld the instructional treatments used in both these two studies as exemplary models of how to integrate a language focus into meaningful and motivating communicative tasks. There is no doubt in my mind that these activities were more engaging for students than the role plays or typographically enhanced texts I used in my own studies. I would argue that the instructional treatments on pronouns and gender were effective, not because they were intrinsically interesting, but rather because they were intrinsically different from the other instructional activities going on at the same time in other parts of the immersion curriculum. In other words, the activities about childhood memories and futuristic space colonies are so similar to other types of content-based activities routinely encountered in immersion, that they were less effective at making significant changes to target language accuracy.

Conclusion

Considered chronologically, the five studies reveal a progression in how form-focused instruction has been conceptualised over the past 15 years, with later studies owing their more robust findings to specific aspects of the instructional treatments: namely, a more balanced distribution of noticing activities, metalinguistic awareness, and production

practice. Noticing activities are designed to draw learners' attention to problematic target features that are contrived to appear more salient or frequent in oral and written input. Awareness activities include inductive rule-discovery tasks and opportunities to compare and contrast language patterns. Production practice enables learners to use and re-use the target features with opportunities for feedback in a variety of interactional contexts ranging from meaningful collaborative tasks at the communicative end of the spectrum, to linguistic games and role plays at the other end. The foregoing analysis, however, suggests that communicative practice involving lots of negotiation of meaning is less effective than controlled practice, which allows for more systematic provision of feedback.

Production practice that is more controlled than communicative and open-ended was likely more effective across these five studies because of the selected areas of difficulty, all of which are well-known sources of persistent error. In other words, continued opportunities for the same type of meaning-based interaction so characteristic of immersion classroom discourse is unlikely to change the students' use of easily accessible and recalcitrant interlanguage forms. There is little doubt, however, that opportunities for more open-ended communicative practice and negotiation for meaning can contribute to other aspects of second language development. For example, Harley (1993) has suggested that the experiential approach underlying content-based instruction allows young learners to internalize key aspects of the target system, such as phonologically salient and high-frequency lexical items, as well as syntactic patterns that are congruent with their first language. Moreover, it is certainly important to stress that the form-focused instructional options identified here as effective may have been effective precisely because they are complemented in the immersion context by its communicatively rich backdrop of subject-matter instruction.

Students in immersion classrooms benefit from years of exposure to target input and ample opportunities for authentic communication involving negotiation of meaning. This type of interaction facilitates comprehension and also provides supportive scaffolding when target forms are beyond learners' current production abilities. As a result of these opportunities, immersion students develop high levels of strategic communicative

ability, but their interlanguage appears to reach a developmental plateau in terms of accuracy. Continued reliance on communication strategies and negotiation of message comprehensibility arguably loses its effectiveness, over time, for promoting continued language growth in the immersion classroom context. To drive their interlanguage development forward, therefore, these learners need to be pushed to access target forms that are in competition with more readily accessible interlanguage forms. Supported empirically by the studies reviewed here, cognitive theory predicts the feasibility of pushing interlanguage development above and beyond the plateau by means of form-focused instruction.

To conclude, I would like to return again briefly to my experience back at that school in Toronto in the 1980s. At the beginning of this talk, I mentioned how challenging it was to reconcile the observed urgency for effective focus on form with the strong message at the time that focus on form was not really necessary. I hope that my talk has made it clear that the question is no longer whether or not to focus on form. There is now a clear consensus that immersion students require some focus on form, and that teachers have a range of options from which to choose. Results of the five studies I have reviewed suggest that those options should at the very least include noticing activities, activities to increase metalinguistic awareness, and opportunities for production practice.

But now I have an honest yet unsurprising confession to make. When I was an immersion teacher in the 1980s, I was not very good at orchestrating the ideal balance between these types of instructional activities. In fact, my main concern, like most other immersion teachers, was teaching subject matter, as I tried to orchestrate the teaching and learning of history, geography, and mathematics in a second language. Like most other immersion teachers, I focused on language mainly during language arts, but tended to concentrate on the study of literary texts and lots of creative writing. And I also taught grammar–as I said earlier–but behind closed doors, and in very traditional ways. Given what I've since learned from doing research in immersion classrooms, and specifically what I've learned from looking closely at these five studies, I imagine that, if I were to return to teaching school-age learners in immersion classrooms, I would adopt a

different approach. I would incorporate into the overriding focus on content a more systematic approach to language development by strategically integrating form-focused instruction. Ideally, I would aim for a balance of instructional options that integrate noticing and language awareness with production activities designed in tandem with strategic opportunities for feedback. In the long run, such an approach is likely to make students more autonomous language learners as they are pushed to take responsibility for their use of the immersion language and its continued growth.

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Immersion programmes and the Common European framework of reference for languages

Abstract

This article discusses immersion education in the light of "The Common European Framework of Reference for Languages" published by the Council of Europe in 2001. By using Swedish immersion in Finland as a case, it relates the philosophy of the Framework and the suggestions the Framework makes on language learning, language teaching and language assessment to international immersion research and practices. It shows that even thought the Framework is best *adoptable* to the teaching of languages as subject when it comes to the illustrative scales for language competence and use, it also is *adaptable* to immersion education giving a European perspective to the international immersion research and practices.

Key words: immersion programmes, immersion curriculum, Common European framework of reference for languages, language learning objectives, multilingualism

Background

Finland has since mid 1990's been engaged in a process of curriculum reform to adapt the curriculum to the changing needs of the society. The national curriculum and the local curricula for pre-school and grades 1–9 are completed in 2004 and individual schools are working on the school-based curricula that have to be taken in use by 1.8.2006 (POPS 2004). As to content learning, the students in an immersion programme are expected to meet the same objectives as the students in any comprehensive school programme in Finland, despite the language of instruction. The more immersion specific task for the schools is to define objectives for the languages introduced in the programme. (POPS 2004.)

When designing the school-based curriculum, a Finnish school implementing an immersion programme is to follow the national curriculum and the local curriculum. These two curriculum documents, the national and the local, are written on a more general level and state that the individual schools are to address the detailed immersion

objectives that are in tune with the structure of the programme the school is implementing (POPS 2004).

Before the current curriculum reform immersion education was not mentioned at all in the national curriculum in Finland. The current curriculum reform has brought the concept of immersion education in a second language as well as content teaching in a foreign language into the national curriculum. The curriculum does not make any restrictions in the number of subjects the programme is expected to be giving in the immersion language and the students' mother tongue. It only obliges the schools to make sure that the immersion language is developed to such a level that the students are able to meet the content objectives of the particular subject when studying it in the immersion language (POPS 2004).

The national curriculum (POPS 2004) is in tune with the interdependence hypothesis of Cummins (1984) since it accepts that transfer of skills may occur between the mother tongue and the immersion language and thus allows for a part of the mother tongue curriculum to be taught in the immersion language. Reading and writing may also be taught in the immersion language. The curriculum says that the skills in the student's mother tongue have to develop to the same level as for students in school programmes where all teaching is given in the students' mother tongue regardless of the amount of teaching in the students' mother tongue in the immersion programme. This is addressed in the curriculum by stating which parts of the mother tongue curriculum has to be taught in the students' mother tongue (POPS 2004). These parts are connected to language, literature and culture specific aspects of the mother tongue curriculum.

Interestingly, the new national curriculum only briefly mentions the objectives for the learning of the immersion language. This is done by inviting the schools to define such objectives for the immersion language proficiency that are in tune with the programme structure (POPS 2004). At minimum the schools are asked to define the language objectives for receptive and productive skills of oral and written language as well as for cultural knowledge. The curriculum text anticipates that the immersion students may

reach a higher level of skills in the immersion language than the mainstream students who study this language as a subject for two hours a week from grade 3. No other guidelines for defining the objectives are given than that the schools shall take into account the subjects taught in the immersion language when the objectives are defined. It is worth nothing that, as to non-immersion teaching, the curriculum gives detailed objective guidelines for the teaching of mother tongue as well as for the teaching of a language as a subject for two hours a week, and of course also for all the subjects taught in the Finnish schools (POPS 2004). But no such subject as 'immersion Swedish' exists in the national school system in Finland at the moment.

It is quite clear that the schools implementing an immersion programme in Finland need further guidance when defining the language learning objectives for their immersion programmes.

International immersion research – products and processes

It is natural that the appropriate guidance for defining the language learning objectives for the immersion programmes in the Finnish schools is based upon the past and the present international immersion research on products and processes as well as upon past and present good practices.

International immersion research has a strong Northern American focus. Especially the results of the Canadian immersion research published in numerous reports have played an important role in the development of the immersion programmes throughout the world (see e.g. Swain & Johnson 1997). The initially product-oriented Canadian research projects have resulted in an overall conclusion that the French immersion programmes are successful and produce good learning outcomes. As to the development of the immersion language the students have been shown to end up with excellent receptive skills and good but non-native-like productive skills. (Swain & Johnson 1997.)

As Roy Lyster (in this volume) pointed out, already the early research projects in Canada identified a plateau effect in the immersion programmes. The plateau effect is a label for a phenomenon when the immersion students reach a plateau in the development of their productive second language and that this plateau prevents them from further progress in their second language development toward a more exact and nuanced use of the second language. The emphasis in the Canadian immersion research has been on this plateau effect since mid 1980's (Swain & Johnson 1997). In the 1990's the focus in the Canadian immersion research has clearly moved from the learning product to the classroom processes (Swain & Johnson 1997). The initial process-oriented projects that focused on the plateau effect led to the following suggestions: the students should be (1) given increased possibilities to use the L2 in the classroom, (2) provided with more form-focused instruction, and (3) engaged with native French-speaking peers (Tarone & Swain 1995). Two of the three suggestions look inside the classroom and one looks outside the classroom. Today, the primary solution in the fight to minimize the plateau effect in Canadian immersion has been to intensify immersion pedagogy inside the classroom (see e.g. projects presented by Roy Lyster in this volume).

Finnish immersion research initially also had a product-oriented emphasis for the same reasons as in Canada, that is, to reassure educators, parents and administrators that immersion is able to keep up with the expected language and content objectives (Laurén 1999). It soon became obvious that the results in Swedish immersion in Finland were in tune with the Canadian results with an overall conclusion that the programme is successful (Björklund 1997). The strong interest in language teaching pedagogy at the University of Vaasa, the immersion contacts established to Catalonia, and the changing emphasis of the Canadian immersion research directed in a natural way the interest in Finnish immersion research to classroom processes and immersion pedagogy (Laurén 1999). An overall strong interest in and long tradition of research in language pedagogy (Swedish as first and second language) at the University of Vaasa naturally directed research contacts to immigrant researchers in Sweden and elsewhere in the world. This led to a stronger emphasis on the early years in immersion in the Finnish immersion

research than in the Canadian immersion research (see e.g. Björklund 1996; Mård 2002; Södergård 2002). Intense cooperation between immersion researchers and immersion kindergarten and pre-school teachers has helped the Finnish immersion researchers identify classroom processes to maximize the quality of immersion education during the kindergarten and the pre-school years. The output-oriented, consciously planned classroom processes implemented in the Finnish immersion kindergartens and pre-schools have resulted in the students entering school with a higher productive second language competence than before, and thus in better quality of the entire immersion programme (Buss 2002; Mård 2002; Södergård 2002).

Another national emphasis has been to increase the role of the bilingual environment in the Swedish immersion programmes to fight the plateau effect the Canadian immersion research has identified as being an undesirable result of classroom second language learning (Laurén 1999). The sociolinguistically oriented research projects in Finland have identified a similar type of plateau effect among the Finnish immersion students that is reported in Canada. However, Finnish research has also shown that even though the contacts with the bilingual environment have in many cases been linguistically unbalanced, the established contacts have been a step in the right direction since the immersion students' competence in the areas that have been studied, for example the use of verbs, are in Buss' (2002) study closer to native-speaker norms than the Canadian researchers Harley, King and Burtis (1987) have reported.

As to classroom processes in immersion programmes, the Finnish immersion programmes gain from the strongly Northern American focused immersion research that has a strong inter-classroom emphasis. It is, however, important for the Finnish schools implementing an immersion programme to rely on additional sources of information that will emphasize a European point of view to languages. The Common European Framework of Reference for Languages (2001) is a useful tool. The Framework has also been used to some extent in the new national curriculum documents in Finland.

The approaches in the Common European framework of reference for Languages and immersion research

In 2001 the Council of Europe published a document called "The Common European Framework of Reference for Languages: Learning, teaching, assessment" (2001; *Eurooppalainen viitekehys* 2003). The Framework is a result of a process during which a large number of inter-European and extern-European language experts have been consulted on issues concerning language learning, language teaching and language assessment to develop a common European instrument in teaching and assessing languages and language competence. The Framework describes in a comprehensive manner various aspects on language teaching, learning and assessment recommended to be used as a basis when planning and setting up language teaching in a country or in a single school. The main function of the Framework is to assist administrators, course designers, teachers, teacher trainers, examining bodies, etc. in making informed choices. By going through the different chapters, the users of the Framework are constantly invited to reflect on a particular aspect of language learning and teaching and to consider the relevance of it for their particular contexts and purposes.

Generally speaking, the Framework emphasizes a learner-centred viewpoint to language teaching. It further emphasizes the compatibility of language studies and language exams inside Europe as well as multilingual language competence of the learner.

The language learning philosophy of the Framework does not rely on one single previous or current language learning or language teaching theory. Instead, it combines the currently held views in this matter with an emphasis on the particular view of language learning and teaching that has marked the Council of Europe since the 1970's. This particular view is action-orientation. Thus, one of the approaches the Framework is based on is an action-oriented or functional approach. Another approach the Framework emphasizes is a multilingual and multicultural approach.[1]

The functional/action-oriented approach

The functional or action-oriented approach views learners' as social agents. Language learning is regarded in the Framework as preparation for the active use of the language for communication. Immersion education also has its origins in the functional approach to language learning. The overall language objective for immersion programmes is functional bilingualism, or in the case of Finland functional multilingualism with the definition emphasizing the learners ability to use the language for communication (Laurén 1999). Meaningful communication in the second language is even a central basis in immersion pedagogy (Laurén 1999).

The functional approach emphasized in the Framework takes into account the cognitive, emotional and volitional resources of an individual. It also takes into account the full range of abilities specific to and applied by the individual as a social agent. In the Framework, this is shown by breaking down language learning to a vertical dimension of language competence and a horizontal dimension of language use. The vertical dimension of language competence is in the Framework divided into: general competence and communicative language competence. The vertical dimension is presented in the Framework as a scale for levels of language proficiency. Three main levels of proficiency identified in the Framework are: basic user, independent user and proficient user. Each of these main levels is broken down into two or more sublevels. The Framework introduces a number of illustrative scales for each level and sublevel. The emphasis is on what the learner masters, rather than on the details he or she does not yet master.

The horizontal dimension of language learning refers to language use. The Framework presents a scheme with the following components: the context of language use, communication themes, communicative tasks and purposes, communicative language activities and strategies, communicative language processes and texts. It is obvious that some of the components are clearly more relevant to programmes in which a second language is taught as a subject than to immersion programmes in which a second language is used as a medium of content teaching. One of the components of relevance to

language and content integration is, for example, the component of communicative language activities and strategies the learners are expected to master. The Framework invites the reader to divide the activities and strategies into productive, receptive, interactive and mediating activities and strategies and to non-verbal communication. In the Framework, for example the interactive activities and strategies are further divided into oral and written interaction and interaction strategies. Again, the Framework introduced some individual illustrative scales for the various components of language use.

The different components of language competence and language use the Framework presents are seen as interrelated in all forms of language use and learning.

As to immersion education, the simple fact that most of the immersion programmes set up around the world have generated individual research projects, indicates that immersion education accepts that there are variables connected to language use and learning in immersion that are important for the quality of the learning product. In fact, Canadian immersion research has even contributed to the international knowledge of the way language competence could be broken down into components of communicative language competence and how the components could be seen to interrelate (Canale & Swain 1983). The learning products studied in international immersion research have also been discussed in the light of different variables affecting language use and learning. The initial strong emphasis in international immersion research on the learning product has also changed to an emphasis on different classroom processes that are understood to relate to the learning product.

The functional approach presented in the Framework further signals tolerance and open-mindedness to what language competence is. It emphasizes that the language competence of a monolingual is quickly stabilised whereas the language competence of a multilingual has a transitory profile and a changing configuration. Multilingual language competence is not viewed as an addition of several monolingual language competences but rather a combination or an alternation of them.

The multilingual and multicultural approach

The other approach guiding the Framework is the multilingual and multicultural approach. The multilingual and multicultural approach views that the goal of language education is to develop a large linguistic repertoire in which all linguistic abilities have a place. The focus on a large linguistic repertoire means that the multilingual approach aims at moving away from a customary approach in which the goal of language education is seen as isolated mastery in several languages having a monolingual native speaker as a model. The multilingual and multicultural approach sees the learning of all languages as interrelated.

One of the core features of a prototypical immersion programme is that immersion aims for additive bilingualism or in case of Finland for additive multilingualism (Swain & Johnson 1997; Laurén 1999). Additive bilingualism, when connected to immersion education, comprises according to Swain and Johnson (1997) native-like proficiency in the first language and high proficiency in the second language. Even though the definition separates first and second language proficiency, the assumption in immersion education is that the languages learned in the programme form a linguistic interdependence (Cummins 1984; Björklund 1998b; Laurén 1998). Thus, it is obvious that the multilingual and multicultural approach in the Framework and the definition of additive bilingualism in immersion education originate from the same theoretical sources of Cummins, where linguistic interdependence is the key component.

The multilingual and multicultural approach in the Framework emphasizes, as the term indicates, multilingualism rather than bilingualism. Contacts with many languages and cultures are viewed as helping the individuals to build a strong linguistic and cultural identity that will go beyond ethnocentrism rather than leading to ethnocentric comparisons between one's own language and culture and the other language and culture. Similar emphasis on multilingualism and multiculturalism is and has always been a natural part of immersion programmes implemented in Finland and in many other parts of Europe (Laurén 1999). On an international level immersion education is mostly connected to bilingualism and biculturalism (Swain & Johnson 1997).

The multilingual and multicultural approach further emphasizes a gradually expanding path of language experience that begins with the language or the languages of the home and first expands to the language or the languages of the entire society and then further to the languages of other nations. The original French immersion programme in Canada and the current ones in Quebec as well as the Swedish immersion programmes in Finland share this path: these programmes introduce kindergarten-aged children whose home language is an official language of the province or nation to another official language of the province or nation (Laurén 1999). While French immersion in Canada aims for bilingualism and biculturalism, Swedish immersion in Finland also introduces the children to two or three languages of other nations and aims for multilingualism and multiculturalism.

The multilingual and multicultural approach shares the constructivist rationale of being holistically oriented. It thus views language learning as a lifelong task. The process of lifelong learning refers in the Framework to pre-school[2], school, out-of-school and post-school learning. The Framework emphasizes that language learning neither begins nor ends or is restricted inside the walls of the classroom or the school. Therefore, the Framework regards the development of the student's motivation, skill and confidence in facing new language experience out of school as being of central importance in language education. Language learning at school should be seen not as a self-contained, product-oriented process, but as laying the foundation for future learning and language use. Language teaching in schools should aim at encouraging students to develop goals to satisfy personal communication needs and preventing students from developing teacher-sanctioned goals in classroom communication.

The international immersion programmes may be regarded as holistically oriented in the respect that they form a programme continuum, in the case of early immersion, from kindergarten until the end of the compulsory education. The immersion programmes have a holistic structure but it is not clear in all immersion contexts that the programme forms a coherent continuum on the level of language learning objectives, especially concerning the points in which the programme moves on physically from one institution

to another, for example from kindergarten to primary school or from primary school to secondary school (for the case of Finland see Buss & Mård 1999; Buss & Mård 2001).

The current process of defining the language learning objectives for the immersion programmes in Finland invites the individual schools to holistically study the programme they are part of and to take into account both the previous and the future immersion experience of the students when defining the language learning objectives for their students.

The orientation to post-school times is obvious in the immersion programmes that aim at functional language competence that will benefit the students in the future (see e.g. Bergroth in this volume). The immersion students are not only introduced to the immersion language to the point in which they are able to process various content in that language. The immersion programmes at least originally, aimed at giving the students sociolinguistically appropriate language competence for future communicative needs (Swain & Johnson 1997). The initial international suggestions to address the sociolinguistic aspects of second language development in immersion concerned both school and out-of-school experiences. An obvious change in the nature of immersion programmes from second language programmes to foreign language programmes, at least on an international level, has resulted in diminished attention paid to the out-of-school learning in immersion. An illustrative example of this is that in 1997, when Swain and Johnson presented the core and variable features of international immersion programmes, they classified the following feature as a core feature: "exposure to the second language is largely confined to the classroom" (Swain & Johnson 1997: 7). Swain and Johnson further stated in their immersion volume that: "Immersion programmes can be done […] provided that the aims do not go beyond a second language proficiency that can be achieved in a classroom" (Swain & Johnson 1997: 12–13)

The role of out-of-school learning is emphasized to be an important dimension in the Swedish immersion programmes in Finland (Laurén 1999). From the Finnish perspective the core feature in classroom learning should be a variable feature that would emphasize the difference between an immersion programme in a second lan-

guage that is widely used in the environment and an immersion programme in a foreign language that is not present in the environment. Researchers such as Siv Björklund (1998a) have aimed at structuring the out-of-school learning in second language immersion into three zones that illustrate a gradual widening of the students' experiences of the bilingual and bicultural environment. In Björklunds' framework, the primary zone consists of the immediate classroom and school environment. The secondary zone consists of the local, the regional and the national environment and the tertiary zone consists of the European and international environment. Björklund has suggested that each of the zones should be integrated to the immersion programme at specific points of time. The most crucial aspect is that contacts to the bilingual and bicultural environment are versatile, frequent, regular and planned.

Curriculum guidelines for a European immersion programme

Through its taxonomy of components of language use and learning, the Framework stresses that language teaching, in this article immersion teaching, is a matter of choices. It is an inevitable fact that those who are responsible for designing language teaching or teaching material, for giving courses or for planning and implementing immersion teaching, in reality make crucial decisions about the development of the language proficiency of the learners. They do this by deciding the extent to which the teaching focuses more on some particular dimensions of language competence and use rather than on others. Thus, the Framework aims at being a tool for informed choices. That is also the ultimate aim of the international immersion research.

Needs analysis

The first step in the process of making choices is to make a needs analysis. The Framework emphasizes that the aims and objectives for language learning and teaching should be based on an appreciation of the needs of the learners and of the society. In other words the Framework invites to analyze the local context in which the learners are

living and to reflect what the language learner needs to learn in order to communicate in that particular context or society.

It has become quite clear in this article that the societies in which the European and the Finnish immersion programmes are implemented are certainly different to those of the immersion programmes in North America. The multilingual and multicultural approach adapted in the Framework emphasizes the diversity of languages and cultures in Europe and points out the fact that most of the European countries are bilingual or multilingual and the need to use several languages for communication and to know several cultures is a natural part of everyday life in Europe. This is true even for Finland. The out-of-school language learning emphasized in the Finnish immersion research is thus an important issue in a European immersion programme.

Programme analysis

The Framework further invites the readers to consider the potentials of the programme they are engaged in for the language development of the learners. It is a fact that different school subjects develop different vertical and horizontal dimensions of language use and learning (e.g. Met 1998). Previous research and good practices are useful tools when discussing this. Also the Finnish national curriculum is useful for this purpose, since language is discusses in connection to all subjects, not only to mother tongue and the different languages as subjects. A cross-curricular analysis of individual programmes helps to identify the role of each subject and each teacher in the programme.

In other words, the Framework basically asks all immersion classroom teachers and subject teachers to forget about being a math, a history or a language teacher and to sit down and reflect on the language component in their individual subject. The national curriculum in Finland is, as stated above, a good starting point together with the teachers' own experience and expertise. Hopefully, the team of teachers finish with a list of vertical and horizontal components of language learning and use that are naturally

in the programme. Then it is time to make the choices of what to focus on and when and who focuses on what and when. After that it is time to analyse and make decisions about the role of the bilingual environment in the programme, i.e. to add the out-of-school aspect to the programme.

The needs analysis and the programme analysis should result in an immersion curriculum that includes detailed and interrelated objectives for all languages in the language repertoire of the learner. The ideal, that is also discussed in the Framework, would be to develop a language portfolio for the combination of skills the learner has developed in the programme.

Conclusion

It can be concluded that together with the international immersion research results and good immersion practices the Common European Framework of Reference for Languages is a useful tool when designing objectives for the immersion programmes in Finland as well as in other European countries. It invites to look both inside and outside the classroom and to consider what is specific for each individual programme. The most valuable message it has is that it gives a European perspective to the international immersion practices and research.

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[1] The Framework makes an separation between the terms multilingual/multicultural and plurilingual/pluricultural. In the Framework, "multi" refers to society and "pluri" to an individual. This particular terminological distinction is not established in scientific literature on bilingualism and multilingualism. I will, in this presentation, be faithful to the more established scientific literature on this issue and use only the term multilingual and multicultural for what the framework uses both multilingual/multicultural and plurilingual/pluricultural, and in the same way as other scientific documents on this issue point out, if it is necessary, whether I refer to an individual or to a society.

[2] Pre-school means in this context the time before a student enters school, not institutional pre-school duation.

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Changes in the interlanguage grammar of engineering students studying in an FL-medium program

Abstract

Most research results related to learning through a foreign language come from immersion programmes, aimed at fairly young learners. In contrast, this paper relates to an area with much less research evidence: the L2 development of adult, fairly advanced learners' interlanguage in foreign-language medium learning environment. Findings discovered in a follow-up research on the changes in the written interlanguage of students in a Finnish polytechnic are discussed. The main result is the improvement of interlanguage grammar of learners whose proficiency level was initially low, which can be interpreted as previously taught knowledge (high-school grammar) becoming crystallized through massive exposure to the target language (professional texts). This finding relates to the importance of interplay between learning in formal and informal language learning environments. The results of this study can be seen as a contribution to the current debate on the use of foreign /second language as the language of instruction in a wider range of learning options in Finnish polytechnics.

Key words: FL-medium instruction, implicit learning, input hypothesis

Finnish polytechnic students studying through a foreign language

This presentation deals with theme foreign language-medium learning environment from the view-point of adult learners who study in higher education. The discussion is based mainly on the results of a recently completed research project (Rauto 2003).

The learning environment of the learners in the presentation is an English-medium degree program in engineering in a Finnish polytechnic. The English-medium degree programs started in Finnish polytechnics in the beginning of 1990's and soon gained wide popularity. However, very little systematic research has been carried out on these programs. The current study can be seen as a beginning of a series of research projects for filling that research gap.

As the English-medium degree programs in Finnish polytechnics are usually international programs, the language of instruction is English throughout the whole length of four years of studies. Some polytechnics offer different program options in English and Finnish but, for example, in Vaasa Polytechnic, where the current learners were studying, identical programs have been offered in the two languages, with separate teaching arrangements.

Apart from a language module in the beginning of the studies, there may not be any target language component integrated in the study program and the students' use of the target language is not supervised. For the language researcher, a dual program arrangement described above has provided an interesting question to explore: why would a Finnish L1-student enroll in an English-medium program if the same program option – for example the degree program of mechanical engineering – was given in the mother tongue?

From time to time, students who have identified themselves as less successful language learners in their high-school studies claim to enroll in these programs for the particular reason to use studying through English as a more appropriate method to improve their language skills than formal language instruction had provided. This has presented a real challenge to the researcher: to find out to what extent a learner would really benefit from these programs in the view of language learning. Would massive exposure to the target language be a better option where traditional language teaching has failed?

Description of the current study

The study was restricted to writing skills and the grammatical component as the combination of the two seemed most interesting in the light of the present writer's long teaching experience with polytechnic students, presenting the most challenging areas in the language command of these students. Thus the focal point in the research came to be *grammatical errors in the learners writing.*

The longitudinal method was used so that the learners' language level was measured at two stages: in the beginning of the studies and after one and a half years. The test type used in the research was a written translation test on a technical topic. An identical pre- and post test seemed appropriate to eliminate all possible variables, liable to appear in a less guided writing task. For linguistic reasons the research group consisted of only Finnish speaking students – altogether 19 – and thus the minority of approximately 30 % of international students were screened out.

The initial test revealed that the learners' proficiency level varied considerably. The learners seemed to fall into three categories, which were labeled as *high, intermediate* and *low*, the number of mistakes and errors being made by the individual learners ranging from very few (N 5) to a considerable amount (N 37) as seen in Table 1:

Table 1.   Proficiency level categories of learners when assessed by the number of morpho-syntactic, ortografic and lexical errors made in the initial test

proficiency-level group	high	intermediate	low
number of errors	5 – 11.5	13.5 – 25.5	32.5 – 37
number of students	5	11	3

This discovery presented a possibility to look at the possible changes from the view-point of different proficiency-level groups and find an answer to the question: would the number of errors disappear at the same rate regardless of the proficiency level? To present the question in terms of the learners' learning history from secondary-level education, *would certain deficiencies which had still remained in the learners inter-language grammar after ten years of formal instruction be affected by massive exposure to the target language* (reading and listening to professional language) over the testing period – or had these learners' interlanguage possibly become fossilized? The three learner categories came to present three different phases as to what extent their previous

formal language instruction had been processed into the learner system (see Ellis 1994: 86–89):

1. it would appeared well integrated in the learner system (highest group)
2. it appeared to be integrated to varying extent (intermediate group)
3. there appeared to be a gap between previous formal instruction   and the learner system (lowest group).

A second research question also emerged from the data: would certain errors possibly be more resistant to implicit learning than others.

For obtaining numerical evidence, error analysis was used as a measuring instrument. Error categories were deviced to accommodate for all the mistakes and errors which the learners had made. It appeared that one interlanguage phrase of some of the learners could include as many as five different types or morphological and syntactic errors, as indicated by the following example:

learner's interlanguage: *correct expression*

The rate of change of the coolant is recommend   The recommended interval between changing

two years*   coolant is two years:

Using the fine-tuned measuring instrument described above, the following error scores in the grammatical performance were obtained in the pre and post tests.

Table 2.   Total scores of all the learners in the pre and post tests.

All proficiency levels	test 1 (before)	test 2 (after)	change in percentage
total	*293*	*214*	*26 %*

Within in one and a half year's time, practically one third of the errors and mistakes had disappeared when the total score is considered.

Interpreting the results and trends in terms of the input hypothesis

It was deemed appropriate to test the results against the well known *input hypotesis* (Krashen 1982), often cited in immersion literature. It claims that a learner learns a language by massive exposure to that language and that there is a link from *input* (the language the learner is exposed to) to *output* (learner's own oral or written performance in the target language). As the current study focused on written skills, *input* would consist of the learners' academic literature (books, handouts etc) and *output* of the written language produced by the learners.

Considering the linguistic environment where the learners where studying, it needs to be taken account that input models were also provided by the teachers, mostly non-native speakers of English, whose language would not always comply with the target language norms. Thus the learning environment could be described as one where input would also consist of incorrect models – a *lingua franca* environment. However, as the learners' academic reading material consisted mainly of literature written by native speakers, it was presumed that most of the written input would provide correct language models. Thus it could be hypothized that the syntax, vocabulary and also style used in professional technically related texts would be transferred to or at least reflected onto the students' own writing. The overall good learning result, a 26 percent decrease of grammar errors, seems to lend support to the hypothesis.

Some researchers claim that input alone is not sufficient for learning and emphasize the role of *output* (*comprehensible output;* Swain 1985). According to Swain, the learner needs to actively participate in the production of the target language, for effective learning to take place. In the current learning environment, output played a minor role in the learning environment according to the reports collected from the learners. Apart from test answers, the teachers did not require much written material to be handed in

nor was students' written work monitored from the language view-point. Some of this study material was collected as research material for the current study. The line between reproduction – direct quotes from literature – and actual learner production appeared to be difficult to draw. The material was therefore discarded from the research data.

Before exploring the results and trends related to different learner types and different type of errors, another look needs to be taken at the input hypothesis – with particular focus on the question "does input *automatically* reach the output stage?"

It has been claimed (Gass 1997; Schmidt 1990) that for utilizing the language models presented in the input, the learner needs to have prior knowledge, for the *intake* to take place. Intake means that the features in the input will be integrated into the learner's language. Prior knowledge is seen as a help to the learner in recognizing these features in the input and making him/her ready to accept them. In the case of the learners in the current study, the grammar knowledge obtained from comprehensive and high school language teaching can be thought to constitute this prior knowledge.

Differences between the proficiency groups and prior knowledge

The results related to the grammatical performance of the different proficiency-level groups presented in trend lines can be seen in seen in Figure 1.
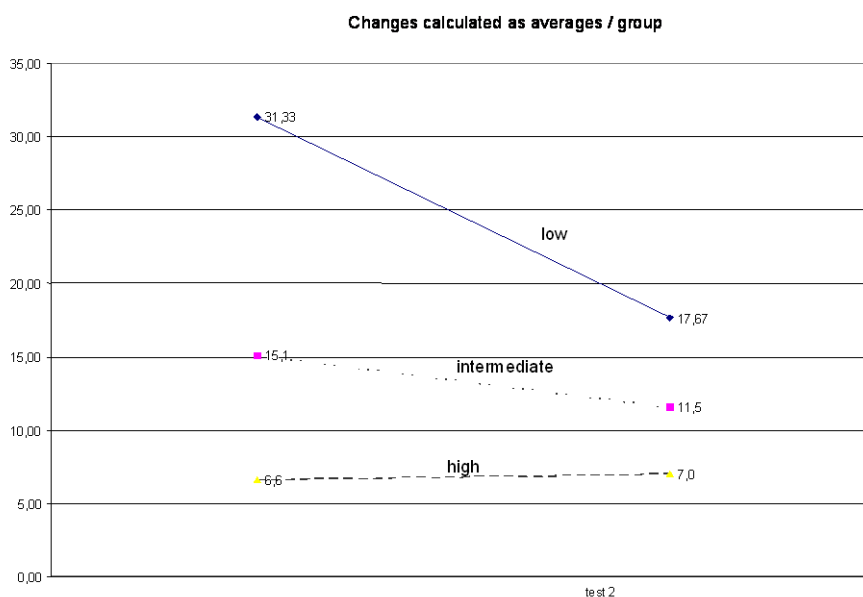
Changes calculated as averages / group

Figure 1. Total error scores in test one (point on the left) and test two (point on the right) of each proficiency group calculated as averages. Trend lines have been drawn to connect the points.

The fact that the highest group does not appear to have improved can be explained as follows. The number of errors and mistakes made by this group in the pretest was marginal and therefore not much scope was left for improvement. On the contrary, the lowest group, which exhibited many deficiencies in the command of the target language system in the first test, had made considerable progress. Their performance in test 2 is approaching that of the other groups, which means that the whole research group of nineteen learners has become much more homogeneous.

Considering the importance of prior knowledge for the learners in the current study, the differences between the proficiency level groups can be explained in the following way. Prior knowledge exists in the interlanguage system of all the three learner levels but with the slower learners in a less integrated form than with the higher proficiency-level learners (Ellis 1994; Gass 1997). Consequently, English-medium instruction appears to have been particularly beneficial to the slow learners. These learners' prior knowledge has presumably been latent in the learner's language systems and has now become crystallized through studying in English-medium environment.

Figure 2 presents the changes from the view point of the error categories in relation to the three proficiency-level groups.
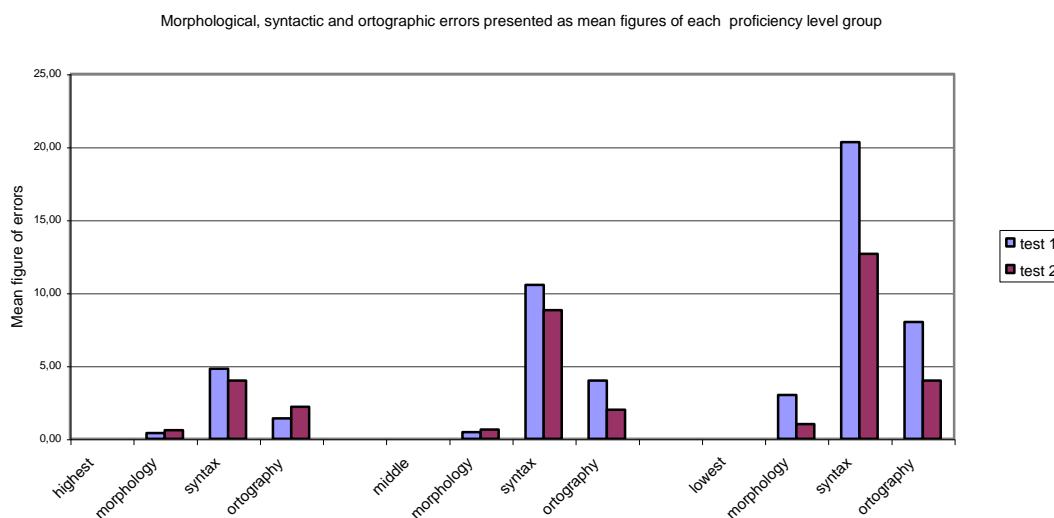
Morphological, syntactic and ortographic errors presented as mean figures of each proficiency level group

Figure 2.   Changes in the morphological, syntactical and ortografic errors presented as mean figures per each proficiency-level group.

A common trend for all groups is a decrease in syntax errors. The increase in spelling errors of the highest group may reflect the fact that spelling conventions have been regarded by this group as non-significant features of the target language. There is an increase in morphological errors made by highest and middle group. A closer look at these errors (see Rauto 2003: 104–114) shows that these errors do not reflect serious deficiencies in the command of the interlanguage system. On the other hand, the morphological errors made by the lowest group in the first test are related to deficient knowledge of the target language morphology and their decrease indicates a genuine improvement in these learners' interlanguage system. The results of the middle groups presented in mean figures indicating only a small increase (for more details, see Rauto 2003:178; 183) do not do justice to the majority of the learners (7 out of 11) in this group, the number of whose morphological, syntactic and orthographic errors has decreased considerably.

Different error types and the role of prior knowledge

The third research question relates to different error types. The following two examples will illustrate the development. The first example presents errors made in the use of the 'of genetive' in one individual learner's performance:

test 1 (before)	test 2 (after)
	(*0* = no error)
car's coolant's tolerance*	*0*
stick's lower part's colour	*0*
the box's colour*	*0*
the stik's upper colour	*0*
liquid's acid corrosion protection*	*0*

The example shows that the respective learner has made eight errors in test one but none after. The trend is interesting because the 'of genetive' is a grammar item which tends to be fairly resistant to learning in traditional teaching environment although teachers are known to pay attention to it in form-focused language teaching. This development can be seen as lending support to the input hypothesis because this phrase pattern is a frequent feature in the input language, i.e. expository type of texts used in engineering language.

The second example presents a reverse development in the learners' language – the errors have not disappeared:

test 1 (before): no error	test 2 (after): error
When you compare the color,	*by compiling the color…it will*
you'll get to know…	*you …**

The syntactic feature in this example is subordination, frequent in technical expository texts (e.g. Biber 1988). Although frequent models related to this syntactic pattern are provided in the technical reading texts, no clear development can be seen. The learner's language use seems to vacillate. How can this explained? The relation between hypotex and paratax is one of the most challenging language aspects to command in even L1 writing and although known to be included in high school language teaching, it has presumably not been given sufficient attention. On the other hand, the learner's performance in test two shows that he has become aware of a typical syntactic feature of technical writing, the contracted sentence pattern. Trying to transfer this typical feature to his own writing is an indication of learning as such. Thus restricting the research angle to grammar does not do justice to this learner's overall language development.

The errors thus fall into two categories: one in which the number of errors decreased and the other in which the number of errors remained practically the same. These categories can be summed up as follows:

category 1: prior knowledge	*category 2: no prior knowledge*
(comprehensive school and high school grammar)	no (or insufficient) explicit knowledge
↓	↓
changes (number of errors decreased)	no changes (number of errors remained the same)

A correlation between prior knowledge and changes can be seen. The learners have presumably not been provided sufficient explicit guidance in form -focused teaching, i.e. in grammar items which would not typically be included in the repertoir of high school teaching. This finding applies even to the performance of the highest proficiency level group. It is obvious that form-focused teaching or at least guidance, e.g. in proof-reading and editing by a language expert (teacher), is needed because not everything was learned by mere exposure to target language models. On the other hand, the possibility of some of these language items remaining beyond the limit of *ultimate attainment* is a consideration to be taken into account.

In contrast, improvement has taken place where prior knowledge is evident, such as the basic items included in comprehensive school grammar (verbal morphology, determinants in anaphoric and cataforic reference, inflectional endings etc.). This can be interpreted as an instance of interplay between formal and informal learning – or explicit and implicit processes taking place (see Ellis 1994).

Considering that mistakes and errors made in the basic aspects of the target language system had disappeared from the learners' interlanguage without any form-focused teaching, speculation can be made as to how much potential language capacity of the learners in the current study has still been left unutilized without form-focused teaching, i.e. where the *optimal attainment* level would have been. How much higher could the overall result of 26 percent improvement have been if guidance had been provided for example in the form of monitoring learner output or increasing the amount of written learner output?

The issue of attainment can be speculated form the view point of the learning process by revisiting the input hypothesis again. It has been claimed (e.g. Gass 1997) that besides prior knowledge there is yet another interface between input and intake, namely *comprehension.* The learner needs to understand the text without difficulty so that enough of his/her processing resources will be left for language acquisition to take place (e.g. VanPatten 1996: 27). Comprehension as such can be of three kinds (Skehan 1998):

- schematic knowledge (related to background)
- contextual knowledge (related to situation)
- systemic knowledge (related to syntax, semantics, morphology).

If the learner relies for understanding mainly on the first and the second types of knowledge, Skehan (1998: 15) claims the following: "effective comprehension may leave the underlying interlanguage untouched." In other words, the learner might continue making the same mistakes over and over again.

This claim is in obvious contradiction with the original input hypothesis (Krashen 1982) but it might offer an explanation why learners' interlanguage has been reported to remain fossilized in certain immersion programs (e.g. Hammerly 1991). In other words, the respective learners have not fully engaged the systemic knowledge when processing the input. In exploring this question further, studying learners' different reading styles might throw some light on the issue. It can be speculated that there would be a correlation between the bottom-up, as opposed to top-down, style and improvement in target language accuracy (see e.g. Ellis 1994: 92).

Conclusions

Although good overall learning results appeared to be obtained by implicit learning in the current study, form-focused language instruction or guidance should not be overlooked. The learners in the current study did not improve on all morphological or syntactic items by mere exposure to the target language. Another consideration is that even if credit is given to the English-medium learning environment as helping the learner in his/ her language development, learning could still be more efficient with the addition of form-focused guidance and increasing the amount of student output in the study programs (e.g. Swain 1985 above). More research evidence needs to be collected to this effect.

On the other hand, the main results in the current study indicate that learning is taking place through studying in English, especially as far as the slower learners are concerned. Consequently, the following conclusions can be made:

(1) *The entrance requirements* to FL-medium programs should not be made too strict to screen out the potential learner candidates. Good receptive skills might be sufficient to enroll into English-medium programs as productive skills can be expected to develop through reading in English.

(2) *More flexible English-medium teaching modules or courses* could be provided. Learners should be given a chance to participate in English–medium instruction without committing themselves to the full length of four years, currently the only FL-medium option in some polytechnics. Small-scale FL-medium modules could be offered, alternating with Finnish-medium modules. Such arrangements are currently being used in many Finnish polytechnics. However, co-ordination on the national level or co-operation between the polytechnics is lacking. Furthermore, these smaller modules would attract more international exchange students and thus enhance the FL-medium learning environment in the FL- medium class-rooms.

(3) As English-medium instruction seems an effective language-learning model, *English-medium teaching options should be also to the offered to the vocational school background learner groups*. According to the current study, the English medium instruction appeared to be particularly beneficial to the lower proficiency level learners. Regarding these learners' more fragile prior language knowledge, a language support intergrated into the FL-medium instruction is of particular importance.

It has been suggested (Takala 2004) that proposals related to developing new language policies should include success and horror scenarios. In speculating that FL-medium instruction was to be extended as suggested above, two horror scenarios emerge. The first is that the students' academic success begins to suffer, leading to an increase in drop-out rates. The language teachers' horror scenario could be the traditional language teaching would be partly replaced by implementing more English-medium instruction – forgetting the importance of the interplay between explicit and implicit language learning.

On the other hand, the success scenario of expanding FL-medium instruction can be seen in the vision of the Common European Area in higher education, i.e. the more English-medium instruction, the more European mobility (Prague Communique' 2001).

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From kindergarten to grade 6.
The immersion experience from the pupils' point of view

Abstract

My article aims to analyse immersion from the pupils' point of view. The immersion pupils are represented by 8 Finnish teenagers in grade 6 in Swedish immersion in Vaasa/Vasa, the city where language immersion was first introduced in Finland. The research is partly a follow-up of a study made when the same pupils attended immersion in kindergarten. My results show that the pupils have experienced their eight years of immersion in a clearly positive way.

Key words: immersion, experiences, perceptions, proficiency

My study is based on interviews with primary school immersion pupils in grade 6. The pupils are Finnish-speakers participating in early total Swedish immersion. They have entered language immersion in kindergarten as five-year-olds and at the time of the interview they had spent eight years in immersion, two years in kindergarten and six years in primary school. My aim is to examine the pupils' experiences of immersion teaching in kindergarten and in primary school and to identify the pupils' perceptions of their proficiency in the immersion language.

In the late 1990s I collected data for my dissertation study by observing an immersion group in kindergarten for two years. In my doctoral thesis (Södergård 2002) I focused on the interaction between immersion teacher and children. The observations I made in kindergarten awakened my interest in the immersion pupils' experiences of immersion and their view of the process of learning a second language. When the children had reached grade six I decided to follow up my research and ask them about their opinions. My study is based on three main research questions.

1. How have the pupils experienced immersion so far?

2. How do they assess their language proficiency?
3. In what contexts do they use Swedish?

My research is inspired by other studies of learners' experiences of immersion education, for example research done by Weber and Tardif (1990) in French immersion in Canada and by Michèle de Courcy (2002) in French and Chinese immersion in Australia. My study can be compared to Weber and Tardif's research in the sense that I want to identify the immersion pupils' experiences of starting early total immersion, and to de Courcy's in the sense that I have asked the immersion pupils to describe and analyse the process of learning a second language from their personal point of view.

Research background

My study on immersion at kindergarten level is presented in my doctoral thesis *Interaktion i språkbadsdaghem. Lärarstrategier och barnens andraspråksproduktion* (Södergård 2002). In order to get material for my study, I regularly visited the kindergarten and observed the classroom activities. Since I followed the pupils since their first day of immersion and all through kindergarten, I got to know all the children in the group, and also the teacher's method of work.

Special attention was given to a smaller group of nine children and their cooperation with the teacher during what is referred to as "working in small groups". During the years of observing I regularly videotaped the "working in small groups" and analysed the communication and interaction between the children and their teacher. My study also allowed me to observe the progression of the children's second language acquisition. After the children left kindergarten and started school, my contact with them had been sporadic, but frequent enough for them to still remember me.

On conducting my study eight years later, one of my aims is to examine the pupils' experiences of their very first weeks and months in immersion kindergarten. In this respect the informants' view is highly retrospective. However, the fact that I can

critically compare the pupils' memories and reflections to the observations I made when visiting the kindergarten, facilitates my interpretation of the pupils' statements and strengthens the reliability of my study.

The set-up of the study

I have interviewed 8 pupils, four girls and four boys. The immersion class they attended consisted of 20 pupils, who had been in the same immersion group in kindergarten and followed each other throughout primary school. However, I focused my study on those pupils that had participated in the small group I observed in kindergarten. One of the nine children had started school a year later than the others and was therefore excluded from the study.

When the interview was conducted the pupils were 12 or 13 years old, all born in the same year. In this article the children are given the same fictive names as in the earlier study.

I interviewed each child individually and recorded the interview on tape. My interview was based on a questioning plan, but my goal was only to have my questions answered, not necessarily in any particular order. The pupils were not familiar with the questions in advance but were expected to answer them as I asked them. Since I attempted to make the interview situation as pleasing as possible, I adjusted my questions and the direction in which the interview was going according to the signals, both verbal and non-verbal, that I received from the pupils. Whenever a pupil seemed to feel safe and at ease with the situation, I asked necessary resulting questions, and whenever a pupil appeared to find the situation uncomfortable, I refrained from posing further questions.
I had informed the pupils that I wanted to hear their views on what it is like to attend language immersion. I also explained that their opinions are of importance to researchers and teachers in developing and perhaps improving language immersion instruction in the future (cf. Patel & Davidson 1994: 60–61). All interviews were conducted in Swedish, the pupils' second language. Each interview lasted about 20

minutes. All pupils were able to communicate in Swedish even though their utterances showed great variety concerning content, length and linguistic quality.

The reason I chose to interview the pupils in grade 6 is that when having finished their sixth year of primary school, yet another delimited period in their education was over. I wanted to interview them before they would be entering into a new phase, i.e. lower secondary school. One of the changes immersion pupils experience in the transition from primary school to lower secondary level involves being taught by subject teachers instead of by classroom teachers, and being taught studying subjects separately and not in thematic units as in primary school. Moreover, Swedish is taught less extensively at lower secondary level than at primary school level.

The choice of language immersion

Language immersion was introduced in Vaasa/Vasa in 1987, and when these children started immersion kindergarten in 1996, the Swedish immersion programme had become a serious and attractive alternative for parents who wanted their children to learn languages in a more communicative-pragmatic way than they could do in the traditional language programme. (Björklund 1996; Laurén 1999). Nevertheless, immersion is a voluntary programme, and parents have to make an independent and deliberate decision to choose immersion. This choice is made when the children are only five years old, and whether the children are part of the decision-making process or not, they are always the ones who have to face the immediate consequences of the decision made. The pupils in my study had reached the age of 12 and they had eight years of experience of immersion behind them. Hence, they were likely to have reflected about the immersion programme from various angles and to have formed opinions about both assets and drawbacks.

All the interviewed sixth graders were aware of the fact that their parents had initially chosen immersion for them. Most of them know or assume it was their mother, who was

in control of the decision, the others state that it was both their parents, and one boy adds "But I wanted it, too".

When I asked them how they themselves felt about starting immersion, some of them had difficulties in describing their feelings because "it was so long ago". One of the boys says he does not remember starting immersion at all. Two others report they do not remember it, but one of them adds that it was probably fun, while the other one says that he did not really know what it was but that it was OK. This opinion seems to be the most typical. They do not really remember but they think it was fun.

Some of the children have more precise memories. One girl says it was excellent. She reckons she did not understand the fact that she entered immersion but reports she thought it was enjoyable starting kindergarten.

Example 1.

> **Maria**: Well, I thought it was great that I got… Well, at the time when I was four or five I didn't say to myself that now I enter into an immersion programme in order to learn Swedish. I just thought that, yeah, I go to kindergarten.

When asked whether their parents made the right decision when they chose immersion, all of the pupils say that the decision was right. One girl says she would have chosen immersion herself had she been allowed to make the decision. Only one respondent is a little more hesitant than the others but says immersion has been fun.

Example 2.

> *__I__: Well, now that you've been attending it for so long, do you think your mother and father did the right thing when they enrolled you in an immersion kindergarten?
>
> **Erkki**: Well…yes.
>
> **I**: What has it been like attending immersion?
>
> **Erkki**: Well, fun and…mm, yes.
>
> *I=Interviewer

Two other pupils, too, use the word ´fun´ for describing what it has been like attending immersion. The other children do not settle for answering merely yes or no but immediately motivates why they think immersion is a good choice. Some of their opinions are presented further on in this study.

The children's early experiences of language immersion

At times, one comes across persons who express disbelief in immersion at kindergarten level, since they intuitively reckon this to be too stressful for the children. One reason for this, it is claimed, is that the children are confronted with a language they do not understand in an environment they do not recognise and with an activity that probably is unfamiliar to them. (cf. Weber & Tardif 1990: 54–60.) I therefore wanted to find out the children's early experiences of kindergarten immersion. My intention was to find out whether they remembered their first days and weeks in kindergarten and whether they perhaps would be able to remember feelings of, for instance, expectation, pleasure, dislike, discomfort, fear or confusion.

In order to give them a chance to discuss something concrete, I asked them to first mention whether they remembered anything in particular from kindergarten. This move was also made to improve the reliability of my study, since I could check whether the children actually were able to recall episodes or incidents from their years in kindergarten. This being the case I could also assume that they to some extent could recall moods and feelings.

A couple of the children mention physical aspects of the kindergarten. Several recall different routines: they played, read books and went to various places. Someone mentions different tasks they performed. One of the boys mentions the teacher and the peers, that is, the persons he associates with the kindergarten in very positive terms.

Example 3.

    Timo: Well, the teacher was fun…and it was a fun place.

    I: Why was it a fun place?

    Timo: Well, there were lots of friends and…Well, I don't know, but it was just fun.

    I: Mm, you got to do fun, nice things.

    Timo: Yes, and we often played with Lego pieces.

A couple of the other children, too, mention individuals who played a part in creating the social environment. Not surprisingly, the children also recall festive events such as birthday celebrations.

Those who have remained sceptical about immersion have above all seized upon one of the principles of immersion: the teacher uses the second language from the start when talking to the children. The principle of "one person one language" characterises the communication between teachers and children in immersion. This principle is adhered to also at kindergarten level, which means that the teacher speaks only the second language with the children even during the initial stages when the children's knowledge of the second language is nonexistent (Mård 1994: 71–85). An important goal in my study was to find out how the pupils experienced this strange situation. My question read as follows: When you started kindergarten you did not know any Swedish and yet the teacher spoke only Swedish. How did you feel about that?

Some of the children mention that it was difficult in the beginning but that it gradually became easier.

Example 4.

    Saara: Well at first it was a little difficult but you learned when they spoke Swedish all the time.

Several of the children attempt to account for their own reflections at that particular stage, like the boy in Example 5.

Example 5.

> **Kalle**: It was rather strange when I came there at first when I didn't understand anything, and I thought, what is this?

One of the girls describes a language acquisition close to the ideal: her understanding developed gradually without her even being aware of it.

Example 6.

> **Irma**: Well, you didn't understand anything at first but then you began to understand and didn't even notice it.

Some of the children are also able to give an account of what happened when they began to understand what the teacher was saying to them, and they were thus making sense of the classroom (cf. de Courcy 2002: 75–79). In the next example one of the girls vividly describes how she experienced the first few days and in addition makes an attempt at describing what strategies she used for finding out the meaning of the words she heard.

Example 7.

> **I**: Well, when you started kindergarten you didn't know a whole lot of Swedish.
>
> **Maria**: No, it was so weird, on arriving at the first day it was really weird when you didn't, understand hardly anything, nothing, not even half of what they said. They just talked those teachers and everyone was like...What is this?
>
> **I**: Yes. What did you think at the time?
>
> **Maria**: I was like, I remember that teacher… When I just sat there and thought that, well, now I'm here and what am I going to do. Then they said something in Finnish, too, so that we understood something.
>
> **I**: Right. Do you remember what you did in order to begin to understand?
>
> **Maria**: Well, not really. You just listened and tried to, I thought I'd heard that word before, too, then I always reflected and…you learn better this way.

Interestingly enough, two of the girls remember the teachers having spoken Finnish with them in kindergarten. This may be true in so far as the kindergarten principal visited the group during the first few weeks informing the children in Finnish about the rules they had to follow in order for everyone to have a pleasant and safe time.

Only one of the girls says she does not remember anything about the special language situation at the start. "It's so long ago". One of the boys, too, says he does not remember what language the teachers were speaking, but says that he has thought about it. He thinks the fact that he does not remember it any longer is sad but says he believes it was both Swedish and Finnish. Another boy says it was difficult with a new language and he did not always understand what it was that the teacher was saying. "But it was fun once you started to".

It is clear that all of the children have recollections from kindergarten. Many of them remember special activities. The children's replies also show that they experienced the linguistic conditions as being special. Some of them easily describe and reflect about their experiences while others express themselves briefly. None of the children describe any frightening or troublesome experiences.

When concerns were raised in Canada that second language immersion education for young children was stressful, Weber and Tardif (1990: 54–60) conducted a study based on videotape recordings and interviews with children entering immersion. Weber and Tardif's observations, however, showed that the children did not seem noticeably concerned that the teacher spoke a language they themselves did not understand. Instead they actively took part in everything that was new and interesting in kindergarten.

Weber and Tardif (1990: 54–60) explain the children's ability to adjust to the linguistic situation by saying that children in general, even in their first language, are not always able to understand what adults say. The special circumstances in immersion are thus not as stressful for a child as it would be for an adult. Nor is it necessary for the pupil to understand every word the teacher says.

The now 13-year-old immersion pupils' perceptions about their immersion experience as five-year-olds are consistent with the results in Weber and Tardif's study. The children's descriptions are also consistent with the observations I made during the immersion group's kindergarten adjustment period in the autumn of 1996 (Södergård 2002), when I saw the children participating in the daily activities without showing any

obvious signs of frustration or confusion, even though the teacher addressed them in a language of which they had very little command in the beginning. The reason why this strange communication situation works is partly the fact that the children can use their first language, when talking to each other and to the teacher.

One must naturally interpret the positive findings against the background that several years have passed since the children entered immersion and one may assume that their memories of it are not as vivid anymore. One also has to take into account that the children tell what they want to tell (cf. Baker 1988: 116–117) and what their linguistic and cognitive abilities allow them to tell. Moreover, the fact that none of the pupils report any unpleasant experiences does not necessarily mean there has not been any. On the other hand, one cannot refrain from acknowledging the children's positive views of their first years in immersion.

The school start

Children in Finland start school at the age of 7. The pupils in my study had two years of experience in kindergarten before they started school. The main general difference between the teaching in kindergarten and the teaching in school is that the activity in the former is largely based on play, and the children's own needs and interests are taken more into account. The teaching in kindergarten is overall regulated by a national curriculum, but the children are not taught to read and write, and they are not required to learn academic subject matter. The teaching is based on larger units, themes, and different teaching methods are implemented (Södergård 1998: 15–19; 55–57).

Primary education, however, makes new demands on the pupils. In immersion school the second language is used as a means of instruction for learning subject matter and the children learn how to read and write in the second language. Consequently the school makes greater demands on cognitive/academic language proficiency in more context reduced academic situations (cf. Cummins 1983: 131–132). Since both teachers and researchers agree that this gap between kindergarten and school should not be too wide

(e.g. Björklund 1996: 220), I wanted to study how the children had experienced the transition from kindergarten to immersion school.

All of the pupils had thought starting school was enjoyable and exciting. It was fun having a new teacher and having lessons and homework. However, one of the boys describes starting school from a somewhat different point of view: "Well, at first it was a little, eh, scary, a new school and everyone was so big". When I ask him what it was like later on, he says: "Well, then when…Eh…Well, we're big now so it's not like that anymore…".

I also asked the children how well they thought they knew Swedish when they started school. All of them are aware they knew some Swedish. Only two of the pupils, a girl and a boy, say they knew it well. The girl is the only one in the group who explicitly expresses that she spoke Swedish at the school start: "Well, fairly well, you could speak and you understood practically everything". The other children are somewhat more reserved. They assume they understood the language but were not able to speak it.

In general, the sixth graders were modest when it came to evaluating their Swedish proficiency at the school start. During the time I observed the group in kindergarten, I was able to note how their understanding of Swedish gradually increased until they were able to receive complex instructions that mostly were given only verbally with less and less linguistic adaptation. Apart from the fact that the children seemed to understand most of what the teacher was saying, many had themselves started to produce utterances in Swedish in kindergarten. Several children were able to use Swedish in authentic communication about everyday things with the teacher and the rest of the staff, or with me and other temporary visitors. (Södergård 2002.)

The fact that the children afterwards assessed their skills as much more limited than I did indicates their experiencing the situation in school as totally new and unfamiliar. Yet, much of the input in school coincided with the input they had been exposed to in immersion kindergarten earlier. Much of the organizational-managerial talk i.e. the kind of talk needed for organizing and managing the work in class, is the same both in

kindergarten and in school (cf. Tardif 1994: 466–481). Also, many of the themes that were brought up in school had already been dealt with in kindergarten at a more elementary and concrete level. This indicates the importance of cooperation between kindergarten and primary school to make the transfer smooth and to help the children realize that they can build on what they already know in constructing meaning in the new learning environment.

A somewhat conspicuous statement is made by one of the boys; he claims he knew Swedish better when he started school than he does now. When I ask him to explain this, he attempts to some extent to recant his statement. However, the remaining impression is that he believes he knew Swedish better as a first grade pupil than as a sixth grader.

Example 8.

> **I**: Mmm how much Swedish did you know then? Do you remember?
>
> **Kalle**: I knew it better than now. I have…
>
> **I**: You knew it better than you do now? How so?
>
> **Kalle**: Eh, well, I have forgotten a lot but I can speak a little, eh, well, fairly well but…
>
> **I**: But you believe you knew it better when you started?
>
> **Kalle**: Well, yes but I don't know, I said so but eh now it's rather also (?) the same…well I don't know if I knew it better but I have forgotten a few words, but I've learned, too.

During my observations in kindergarten I had viewed this boy as one of the children who, especially during the second year, seemed to have made great progress in terms of both understanding and production of speech in the second language. The fact that he now thinks that he knew Swedish well at the school start is not surprising. What is surprising is the fact that he believes that he knew Swedish better at that time than in sixth grade, even though he emphasises having learned some at this level, too. When I offer him the explanation that one generally expects different achievements from immersion pupils at different ages and that perhaps, from that perspective, he knew more Swedish as he was starting school, he agrees. However, this "grown-up" view is hardly the viewpoint from which he had originally intended to describe his experiences.

What this boy has experienced earlier and what he expresses in the interview is probably what is called a 'cognitive conflict' (see e.g. Mård 2003), i.e. his cognitive ability would allow him to express himself more in detail and at a more abstract level than his second language proficiency allows him to do. It is probable he feels his Swedish is not proficient enough in the situations in which he needs it, and that he would want to express more than he is linguistically capable of doing. The other children, too, at times seemed to give up their attempts at explaining something they were about to say as they probably realise their Swedish proficiency as being inadequate. Their problems may be partly due to the fact that they could not prepare for the interview beforehand.

Naturally, it is difficult to know the reasons why this boy experiences a setback. Further on in the interview he says that he does not speak as much Swedish outside school as he used to, since his Swedish-speaking neighbours, with whom he used to associate, have moved.

Subject learning

During the first years in primary school, the larger part of the teaching is done in the second language, Swedish. However, as early as in the first few grades the pupils are taught in Finnish, their native language, as well. Immersion teaching in Vaasa/Vasa is characterised by the teaching in themes, which means that several studying subjects are brought together into different units. Some studying subjects are, however, kept outside the particular theme. Gradually, the amount of teaching in the pupils' first language increases and from the fifth grade on, it comprises about 50 % of the teaching. According to the pupils, gymnastics, history, religion and mathematics were taught in Finnish at some point. Since the principle of "one person one language" is adhered to also at school level, some teachers teach Swedish and studying subjects in Swedish while others teach Finnish and studying subjects in Finnish.

I also wanted to find out how the pupils have experienced the fact that studying subjects have been taught in two different languages. Do they feel they learn equally well in both

languages? Or, do they experience any differences in terms of learning depending on the language in which they are being taught? (cf. Björklund 2003: 31–33.)

When I ask them how they feel about being taught various studying subjects in Swedish, the pupils say they learn well. When explaining this to me, they have a tendency to emphasise what they learn linguistically. It is more difficult for them to focus on the subject matter itself.

Example 9.

    Anita: Fun. You have learnt many terms and everything.

When, with the help of a few examples, I explicitly ask them whether they also learn subject matter, all of them respond affirmatively. However, they all believe teaching in the first language is useful. A couple of them explain this by saying that that is when one learns the terminology. The language switch in a studying subject between grades is not seen as being too difficult.

Example 10.

    I: You have learnt some subjects in Finnish?

    Ossi: We have had gymnastics and… religion in Finnish, but now we are taught in Swedish and… so it has been good to.

    I: In what language do you learn better? Is there a difference?

    Ossi: There's no difference.

    I: You learn equally well…?

    Ossi: Yes.

When I asked the pupils if there is any difference between being taught in Swedish or in Finnish and in what language they learn better, most of them answer they learn equally well in both languages, but the opinions vary. Several of the children immediately say there is no difference, while some others are a little less sure but they think they learn equally well in both languages.

Some of the pupils seem to slightly prefer being taught in Finnish. One of the boys says, "Swedish is a little more difficult, it is a little different. I don't know why and why it feels that way". Another boy spontaneously replies that he thinks it is easier in Finnish, "because I'm Finnish". When I ask him how well he learns when taught in Swedish, he says, "Well, there's really no difference but…".

On the whole the children don't seem to find the fact that they are being taught in two languages strange in any way, and my questions may seem irrelevant from their point of view. Getting instruction in the second language is more normal to them, but they also seem to have noticed the benefits from learning to know the vocabulary in the first language.

Benefits derived from the immersion experience

Since the pupils at this age may be able to discuss and reflect upon immersion as a programme for language learning, I also wanted to find out their opinions of possible benefits with being an immersion pupil. Ladvelin (2004) has turned to the first immersion pupils in Vaasa/Vasa and asked them about their view of immersion and language learning, and her study shows that the students were satisfied with the immersion programme, also several years after they had left immersion school.

Most of the pupils in my study explicitly mention the fact that they have learned Swedish, or knowing Swedish as the main benefit and one of the boys adds that he has learned English. Several of the pupils say it has been easier for them to learn languages. In this respect the results are in agreement with the findings made by Björklund and Suni (2000: 198–221).

Two of the children describe the advantage of being able to know Swedish by comparing it to "the others", i.e. their peers who do not attend immersion class.

Example 11.

> **Ossi**: Well, you know Swedish really well, you have a lot of hyötyä (use) from that and, eh, for instance, almost all of my friends have attended a Finnish non-immersion class, so they don't know a word of Swedish and then they don't understand how I speak it so fluently.

This boy is able to see the benefits with immersion from a clearly pragmatic viewpoint. From his statement it is possible to conclude that he is pleased with his Swedish proficiency and that he is proud of his skills. It is noticeable that many of the pupils have their best friends in the parallel non-immersion class and they often make comparisons between the teachings in both classes. All comparisons go in the favour of the immersion class.

One somewhat unexpected benefit is emphasised by one of the boys. He thinks it is beneficial to participate in immersion because he has not had that much homework. When I ask him if that is true, he says he knows this because he has got friends in non-immersion classes. His opinion reveals above all that he has not experienced immersion as too demanding. In general the pupils mention the same benefits as those in Ladvelin's (2004: 78–87) study and their perception of immersion seems to be positive.

When I ask them to explain whether they have any negative experiences from immersion, most of them answer that they don't. However, one of the girls thinks Finnish should be introduced earlier as a language of instruction. Now she is unhappy about the fact that she does not know the names of the oceans and the four cardinal points in Finnish as she was taught those in Swedish. One of the pupils feels the class is forced to change teachers too often and sees this as negative. Yet another view comes from a girl who thinks it is a pity that her best friend attends regular class, i.e. non-immersion class. "But it's OK. It's been fine".

The pupils' perceptions of their own Swedish proficiency

One way of measuring a person's language proficiency is to let that person state how well s/he knows a particular language (Baker 1996: 22–24). In some other studies of

language immersion (e.g. Haagensen 1998) the learners have been asked to determine their Swedish proficiency by filling in a questionnaire in which they evaluated their ability to understand, speak and write Swedish according to a graded scale. My question to the pupils was open and read: How well do you think you know Swedish today?

The most common reply was 'fairly well' with subsequent specifications. A telling statement comes from one of the girls:

Example 12.

     Irma: Well fairly well. Not perfect but…but well.

A couple of the pupils specifying their replies say there are a few things they do not know. One boy says he can understand everything except "difficult words". When I ask him to mention some of them, he mentions the field of religion.

Others who claim they know Swedish fairly well mention various situations in which they are able to use Swedish, specifying it by stating the context. One of the girls says she understands Swedish very well, among other things, she understands Swedish like it is spoken in Sweden. She believes this is because she associates with friends from Sweden.

Example 13.

     Maria: Well, I know Swedish, you can say that I can speak with Swedish speakers and that I believe my command of Swedish is good.

However, it is not a matter of course that all pupils experience that their proficiency in the second language is growing. The most conspicuous reply comes from one of the girls who says:

Example 14.

     Anita: I don't know, not as well, perhaps a little worse…

When I ask her to explain what she means by worse, she says "worse than in fourth grade". This girl apparently believes she knows less Swedish today than two years ago.

Since a statement like that generates quite a few questions, I ask her to explain why this is the case. She replies that she does not know why, but that she does not speak Swedish very well. As a probable reason she mentions that she has more Finnish-speaking friends today whereas she had more Swedish-speaking friends as a fourth grader. At that time she had a hobby where she met Swedish-speaking peers. On my question how well she understands Swedish she replies that she understands it well. Also, she understands the Swedish local dialect, since she comes into contact with dialect-speaking pupils on various occasions.

In order to make my questions about their language proficiency more subtly distinct and to change the angle of my approach (cf. Baker 1996: 22–24), I asked the pupils whether there are things at which they are specifically good. I had expected the pupils to say "understanding Swedish" but only one of them does. Instead several mention the fact that they think they speak Swedish well. This indicates that they compare their oral skills with their writing skills. A couple of the pupils mention explicitly that they speak better than they write. One of the boys reports he both writes well and reads well.

Many choose to say no, in so many words, when I ask them if they are good at something. On the other hand, when I ask them whether there is something at which they are not so good, all except one answer in the negative. This girl finds dictation difficult, but she adds: "When I try hard, I can do it". Another girl tells me that there are a few words she does not know, but "I think I can write them, too".

In general, the pupils' perceptions of their proficiency are positive. Three of them evaluate their Swedish proficiency as being fairly good. Three of them believe their proficiency to be good or very good while two believe they have experienced a setback.

Interestingly enough, the pupils' assessments of their own proficiency need not coincide with mine. Since I have observed the class intensively during the first two years in kindergarten and sporadically during their last year of primary school, I have formed my own opinion of their command of Swedish. Furthermore, their use of Swedish during the interviews is a basis for assessment.

A couple of the girls that I view as highly proficient appear modest when it comes to assessing their own proficiency. This may be due to the fact that their level of ambition is higher than that of the others (cf. Haagensen 1998: 103–108). It could also be due to the fact that their higher level of competence enables them to express themselves using more subtle distinctions and to correct their choice of expression according to what they believe is conventionally correct. They may also be less childish than the others and not as prone to emphasise what they know and can.

Benefits from knowing the Swedish language

I also ask the pupils why they think it is beneficial to know Swedish of all languages. It is to be expected that the immersion pupils' positive attitudes towards Swedish largely stem from a positive attitude on the part of the parents and the teachers that they have met in kindergarten and in school. Therefore it would be interesting to know what aspects the pupils themselves emphasise as being important when they believe Swedish to be a language worth learning.

A couple of the pupils emphasise the importance of learning languages, i.e. bilingualism on the personal plane.

Example 15.
    Irma: Well, it's always a good thing to know different languages, I don't know.

One of the boys stresses the utilitarian aspect and reckons he will have use for Swedish when entering upper secondary school. One of the girls again mentions concrete

situations in everyday life where Swedish proficiency may be useful, e.g. if someone asks for directions. A couple of the pupils express themselves on a more general level emphasising the fact that Vaasa/Vasa is a bilingual town and that knowledge in Swedish is needed for that reason. A couple of others stress the fact that Finland is a bilingual country.

One of the girls gives a long explanation of how much she has benefited from knowing Swedish in the area where she lives because many tourists come there. "It's very difficult if you don't know any Swedish". Also she has discovered how useful it is when she travels herself. A couple of the pupils think knowledge in Swedish it is useful if going to Sweden.

The boy who emphasises English alongside Swedish informs me that if he watches television he does not have to read the subtitles, but understands everything that is being said. He sees Swedish as a key language, a gateway to English and German.

In general, the children's replies reflect what they probably have heard their parents and teachers emphasise when motivating and encouraging them. However, one cannot disregard the fact that several describe situations in which they have themselves benefited from knowing Swedish and that their accounts are thus based on personal experiences.

The pupils' use of Swedish

Most immersion schools in Finland exist in bilingual cities and the pupils are encouraged to use the language they are learning outside the classroom as well (Björklund 1996: 219–221). The bilingual environment in Vaasa/Vasa offers the immersion pupils good opportunities to practice Swedish also in their spare time and to develop a high sociolinguistic competence through authentic communication with native speakers of Swedish (Buss 2002: 69–88).

When asked about where and when they use Swedish all the interviewed pupils say they use Swedish in school, some specify and say they speak Swedish with their teacher. One of the boys says he speaks Swedish with his peers also in class, "but often Finnish, too".

One of the boys speaks Swedish in his spare time, i.e. with the trainer of his ice-hockey team. Yet another boy seems to know peers with whom he is able to speak Swedish. However, they speak Finnish half of the time.

Several of the girls seem to find their knowledge in Swedish useful in their immediate surroundings. One girl emphasises the fact that she lives in a Swedish-speaking area, where it is possible to speak Swedish in shops, and everyone understands it. Here she touches upon the fact that there are people in Vaasa/Vasa, who do not understand Swedish. One of the boys touches upon another fact that is unfortunate from the immersion pupils' perspective: Swedish speakers in Vaasa/Vasa first of all address him in Finnish, since they are in the habit of speaking Finnish to Finnish-speaking citizens.

The girl who claims she lives in a Swedish-speaking area says she speaks Swedish with her father since he knows Swedish. None of the other pupils report speaking Swedish at home. This girl is also the only one who has a Swedish pen friend.

The others say they speak Swedish in various temporary situations, e.g. when someone asks for directions, with relatives in Sweden and Åland and with the bus driver when visiting Sweden. One of the girls says she usually speaks Swedish with "some old teacher".

One of the boys often finds himself in a situation where he is called upon to speak Swedish. As an example, he mentions the day before when his football team played against a Swedish-speaking team and he had asked someone, probably from the audience, if she could get the ball for him. He seems pleased over the fact that he was so fluent in the situation.

Several of the sixth graders seem to have had the opportunity to use Swedish also outside the classroom. At least some of them appear to use it actively and on a regular basis during their spare time. Not unexpectedly, this affects their perception of their proficiency in Swedish. The pupils who use Swedish in their spare time seem more secure, and they seem to have a more positive view of their proficiency in the second language than the others. Worth noting is also that two of the children themselves believe they cannot speak Swedish as fluently as they used to when they were spending time with Swedish speakers outside of school.

By way of conclusion, I ask the immersion pupils, who now have eight years of experience in immersion, what good advice they would give to parents thinking about immersion for their children, or to children soon to be entering into immersion.

All of them say they would advise the parents to choose immersion. They motivate this with the fact that the children will learn a new language, a couple of them emphasise the possibility of learning several languages. Individual comments include: "It's easy, although you wouldn't believe it", "You shouldn't give up if it's difficult to speak Swedish", "It's a good thing and…it's not difficult to do". The concluding remark comes from one of the girls:

Example 16.

> **Maria**: If you…well, if you, eh, want to have a child who will be able to speak, then…you should enrol your child in immersion class.
>
> **I**: It'll be fine?
>
> **Maria**: Yes, it's a good thing.

Conclusion

In sum, my study shows that the pupils have positive experiences from language immersion. The limited size of the sample does not allow for generalizations, but as regards the pupils' very early experiences of immersion my results are in agreement with the conclusions made by Weber and Tardif (1990) and with my own observations

during the adjustment period (Södergård 2002). As regards the pupils' view of being an immersion pupil my study shows the same positive results as the study conducted by Ladvelin (2004).

The pupils also in general seemed to be satisfied with their proficiency in Swedish and feel confident in situations where they need Swedish. Most of them use Swedish also in communication outside the classroom. My results also indicate that those pupils who use Swedish outside the classroom have a more positive perception of their own proficiency.

By critically analysing my interview theme, the pupils' experiences of immersion teaching, it is possible to discern at least two different dimensions: Partly the children have attended kindergarten and school for eight years, and partly they have attended language immersion. The children may have difficulties in separating these two dimensions. The only form of education they have experienced is immersion school. To them, school is immersion school. The only comparison they are able to make is that between what they know about immersion and what they have heard their friends say about what it is like in non-immersion class. I have chosen to say that the children view their experiences of eight years in immersion as positive, but I could just as easily say that they are happy with their years in kindergarten and school. And it is quite possible that the children would have had the same positive experiences had they attended a non-immersion class.

When evaluating the positive answers one must also remember that the pupils associate me with immersion in kindergarten as well as in school, and it is possible that they give me the answers they think I would want to hear. Nevertheless, taking all this into account, the results of the study show that, at this point, the immersion pupils' experiences of immersion are clearly positive.

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Assessing FL listening comprehension skills on different ability levels: The role of the introspection method

Abstract

In order to investigate one means of finding validity evidence, i.e. finding out what a test of listening comprehension of French as a FL actually measures, I have applied the short written introspection method with 150 listening test participants consisting of learners of French. The results give eight different types of introspective responses here labeled nonsense, guesses, word-bound responses, partial comprehension, option-focused responses, résumés, metacognitive comments and no response. It is also shown that the frequency of the responses is related to the listening comprehension level of the participants. Different types of responses are typically given at four different levels corresponding to: novice, lower intermediate, higher intermediate and advanced levels. The introspection method applied proved to be useful as one tool of investigating test validity.

Key words: listening comprehension, MC tests, introspection, validity

Background and purpose

This study is part of a PhD thesis investigating the validity and quality of a test of listening comprehension of French as a foreign language, and presenting means of finding validity evidence through a combination of quantitative and qualitative methods. The listening test used as a basis for this project was originally used at the Finnish Matriculation Exam (spring 2002)[1]. The purpose of this study is to demonstrate the usefulness of the applied short written introspection method, when investigating different response tactics and strategies used by the participants at a multiple-choice (MC) test of listening comprehension. Looking at the response, i.e. the selected option among three (A/B/C), we can see what option has been attractive, how many has arrived at the correct option and how many have chosen each of the distractors. These quantitative analyses give indications of the relative difficulty of the item, and of the efficiency of the distractors. However, we do not know the reasons for the choices of a correct option or of a particular distractor. One test participant may have purposefully

arrived at the correct option by understanding the text, building a representation of it in memory, and noticing that the content of the two distractors does not match this representation, while the content of the correct option does. Another participant may have arrived at the correct option simply by guessing, without having understood the text at all. The chance of arriving at the correct option among three by guessing is, after all, one out of three.

Consequently, in order to pin down the actual, or at least probable, reasons for arriving at the correct option, or to find out the real comprehension problems faced, I have asked the participants to briefly write down their reasons for selecting a particular option, at each item.

The secondary purpose of the study is to demonstrate that different response tactics is largely a function of the listening comprehension level of the test participant.

The listening comprehension process

It is obvious that a listening comprehension task in a test situation is a high-level, complicated cognitive process that could be characterized as three-dimensional. The first dimension is the aural text, the second is the task (the comprehension and selection of an option in the case of MC tests) and the third consists of the participant's knowledge (linguistic and world), skills (listening and strategic, etc.) and experiences. When studying the thinking processes of second language learners as listening comprehension test participants, we should keep in mind two consequences of the fact that speech takes place in real time:

1) The listener must process the text in a speed determined by the speaker, which is, most often, quite fast.
2) The listener cannot refer back to the text – all that remains is a memory, and often an imperfect memory of what was heard. (Buck 2001: 6.)

In listening, there are two types of cognitive processes present: controlled processes, to which we have to pay attention, and automatic processes, occurring automatically and not needing control or conscious attention. The more automatic the listener's processing is, the more efficient it will be, and the faster it can be done. For second-language learners, who know the learned language only partly, language processing will be only partly automatic. Processing will periodically break down because the listeners cannot process the text fast enough (Buck 2001: 7). Their representation of what a particular text was about will in many cases be incomplete and varying. Difficulties can be due to unknown vocabulary, complex syntax, or speech rates that are too fast.

Moreover, every listener interprets a spoken text with the help of, and against the back-ground of his or her own knowledge and experiences. A listener sets up expectations on the route towards a more or less complete interpretation of propositions and texts.

When we add the assessment environment to the model of listening comprehension, we arrive at the three-dimensional process. The way of listening and interpreting the text in a MC test has to be adapted to the questions asked and the statements presented. This makes the listening comprehension an even more demanding cognitive process.

What is more, when a learner is involved in a listening task, it is highly probable that he or she will introduce strategies into the listening comprehension. Strategies are con-scious, controlled processes used to overcome difficulties, to solve problems or to facili-tate the cognitive task somehow.

The introspection method

In an attempt to pin down the more or less conscious processes and the strategies acti-vated in a test situation, the visible "product" of the test task – i.e. the responses to ques-tions or the choices of options – does not give anything like a complete picture of what has actually happened. In order to clarify the picture of what goes on in the minds of learners of French on the matriculation level when taking a listening test I have applied

the introspection method. The theoretical motivation for the use of this method rests on the assumption that human cognition resembles an information processing system. The listening comprehension process is rarely entirely automatic, especially not in a second or foreign language, where an important part of the cognitive activities have to be controlled. The process demands such an intensive concentration on the heard "input" that a substantial portion of it remains in memory. The introspective reporting would therefore be enabled by the verbalization of the traces in memory (Yi'an 1998). Ericsson and Simon (1987: 25) give a framework for studying thinking, where verbal reports of subjects are seen as one of many types of observations that provide data on subjects' cognitive processes. A cognitive process is seen as a sequence of internal states successively transformed by a series of information processes. Within the framework of the information processing model, it is assumed that information recently acquired by the central processor is kept in short-term memory (STM), and is directly accessible for further processing (e.g. for producing verbal reports) whereas information from long-term memory must first be retrieved (transferred to STM) before it can be reported.

According to research conducted by e.g. Vandergrift (1996), Goh (2000) and Leaver (1995) there is a difference in the way participants at different ability levels apply strategies and tactics. On different ability levels, different processes and strategies seem to enter into the listening comprehension tasks. Listening is an active process involving mental activity on different levels (Vandergrift 1996). When there is difficulty with processing a message at the level of perception or word recognition, there will be little cognitive capacity left for high-level processing (Goh 2002). The higher the course level, the more is metacognitive strategy used (Vandergrift 1996).

I am aware of the fact that there are limitations to this type of use and analysis of the method. The participants do the test without any training, so indicating the reasons for their choices is an entirely new activity for them. As might be expected then, while some participants find it natural, easy and interesting, others do not. Moreover, there are activities at three levels present at the introspective method:

1) The unconscious thinking processes and the more conscious test-taking or comprehension strategies applied when listening and solving the task.

2) The giving of a response, i.e. the selection of an option.

3) The introspective responses.

My assumption is, then, that levels 2 and 3 reveal something about the activities at level 1.

Test participants in the study

I have divided the 150 participants at the matriculation level, with approximately 300 lessons of French behind them, from various upper secondary schools in the Turku and Helsinki areas into four ability levels, in order to study possible differences between the processes or strategies applied by participants at different levels at this listening comprehension task. The division is based on their results in the first part of the test, as follows:

Table 1.   Test participants at four listening comprehension levels.

Listening ability level	Points obtained out of total 11	Number of participants
Novice	0–4	47
Lower Intermediate (I)	5–6	41
Upper Intermediate (II)	7–8	42
Advanced	9–11	20

The test procedure

This limited study serving as a demonstration of the application of the method is based on two items (3 and 4), representing the typical item format in the first part of the test, consisting of 11 MC items in all. The focused text and items are given in appendix 1. The entire test administered to the different groups of learners consisted of part I (MC

items 1–11; 20 minutes), part II (3 short-answer items A–C; 10 minutes) and part III (MC items 25–30; 10 minutes). The test procedure for the items 1 to 11 is as follows: during the first listening, the test participants select a response among three options, processing two items at a time. During the second listening, at which point they are also allowed to change their option, the participants are asked to motivate their choice of option. They do it in their mother tongue (Finnish or Swedish) and are given only approximately 30 seconds per item, which means that the responses will be short. There are two reasons for this limited response time. The first one is the fact that in order to get at the information in STM (or working memory), the time allotted should not allow the participants to go into any deep reasoning on their own processes. I want them to write down what is "topmost in their head" – what their memory is working with in the particular situation. The second reason has to do with the practical implications of having access to only one 45-minute school lesson per group within a French course context. I needed responses to several items within a limited number of minutes. The results indicate that the time allotted was sufficient.

Types of responses obtained

Considering different types of responses given at similar previous MC pilot tests applying this introspective procedure (Anckar 2003), I have established eight different types of responses which are presented and defined in the Table 2 below, with examples of introspective responses given at items 3 or 4:

Table 2.   Different types of introspective responses.

Types of introspective responses	Definition	Example
Nonsense (NonF/NonC[2])	The participant gives an answer that contains an interpretation of the text that has little or no similarities with the semantic content of the spoken text:	*"Hän työskentelee maalarina kadulla"* *[He works as a painter in the street]* (K2:3)[3]
Word-bound responses (WF/WC)	The participant gives an answer containing single, separate words from the text, or states that "this word was heard in the text":	*"Kuulin sanan quartier"* *[I heard the word quartier]* (O1:2, B)
Partial comprehension (PF/PC)	The participants give an answer that contains some semantic similarities with the spoken text, but which does not cover all of the needed spoken text information:	*"Turistit kohtelivat häntä kuin nähtävyyttä"* *[The tourists treated him like a monument]* (O4:3, B)
Résumé (RF/RC)	The participant gives a more or less covering summary of the content of the text; the necessary information to be able to select one option and discard the others:	*"Joelia ärsyttää, kun ihmiset tulevat juttelemaan ja ottamaan valokuvia"* *[Joel is annoyed by people coming to talk and to take pictures]* (J12:10)
Option-focused (OptF/OptC)	These responses focus on the semantic, syntactic or lexical contents of the questions or the options presented in the written format:	*"A:sta ei mainintaa, B arvaus"* *[No mention of A, B is a guess]* (N2:4, B)
No response (NRF/NRC)	The participant has simply left the answer box empty.	
Guess (GF/GC)	The participant has stated that he/she has selected his or her answer by guessing:	*"Arvaus"* *[Guess]* (K1:2, A→C)
Metacognitive comments (MetaF/MetaC).	The participant gives comments on his or her thinking about the text, the task, or him- or herself in the particular test situation:	*"Valokuvauksesta ja turisteista puhutiin niin selvästi, että ajattelin, ettei ainakaan ne"* *[They talked so clearly about taking pictures and about tourists, so I thought, at least not these]* (P9:6)

Response types at different listening ability levels

According to the results obtained in this study of limited extension, and, thus, limited conclusive evidence, but nevertheless showing rather strong tendencies, there are different response patterns as a function of the listening ability levels of the test participants (see Figure 1).
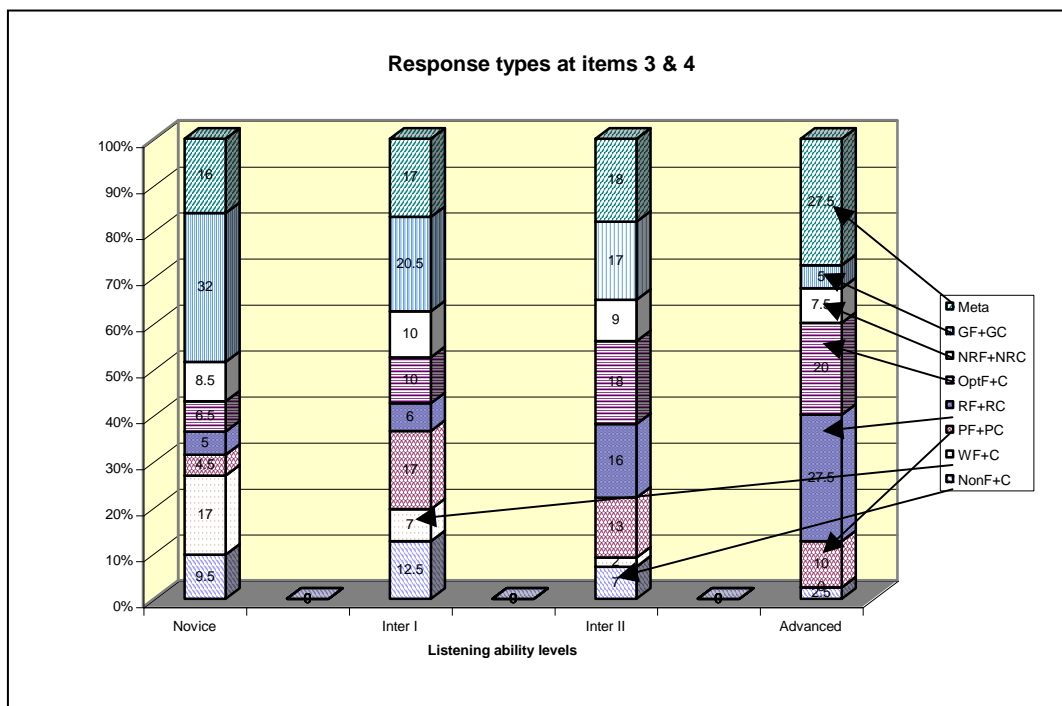
Figure 1.   Response types at different listening ability levels.

Typical responses at the novice level

At the novice level, there is a majority of guesses, and more than 1/3 of them have ended on a distractor. The other typical strategy used at this level is to rely on one or two words and to select an option accordingly. This normally leads to a false option. The processes at this level are text-centred, but the participants do not possess an ability to process speech fast enough to get the content needed to arrive at the correct option:

WF:" *Hörde något om turister"* [I heard something about tourists] (A2:3, A)

WF: *"Turisteista puhetta, loput arvailua"* [Talk about tourists, the rest is guessing] (N2:4, C)

Typical responses at the lower intermediate (I) level

At the lower intermediate level there are still rather many guesses. There is a tendency to handle a little bit more than just single words. At this level, partly correct interpretations are made on the basis of the context or propositions, but the interpretation is not always sufficient for reaching the correct option. Some completely wrong interpretations are also observed. The participants' growing ability to monitor their own problems is observed in the metacognitive responses.

NonF: *"Han ville leva ett liv med mycket livlighet"* [He wanted to live a life with a lot of liveliness] (A5:5)

PF: *"Ei tykkää puhua, ei mainittu ulkona"* [Doesn't like to talk, didn't mention outdoors] (B10:6, B)

PF: *"Turisterna tycker att han är ett exotiskt fotograferingsobjekt"* [The tourists think he is an exotic thing to take pictures of] (A6:6, B)

MetaF: *"Arvaus. En edes ymmärtänyt mitä C tarkoittaa"* [A guess. I didn't even understand what C means] (B7:5)

MetaF: *"Kom fram till alt. B efter andra lyssningen"* [Arrived at option B after the second listening] (A4:5, A→B)

Typical responses at the higher intermediate (II) level

As the text processing gets more automatic, part of the focus seems to move from the text to the options – the ruling-out strategy is used frequently and successfully. Here are also many correct summaries of the text content, but still also some partial comprehensions leading to distractors.

OptC: *"Kaksi muuta vaihtoehtoa on huonompia"* [The two other options are worse] (K19:8)

OptC: *"Hän ei pidä turisteista, B:stä ei puhuttu, joten C on kai oikein?"* [He doesn't like tourists. They didn't talk about B, so C is probably correct?] (K16:7)

Typical responses at the advanced level

Nearly one third of the responses at this level are summaries combined with correct responses. There are also many comments on the options and on ruling-out strategies applied. The three-dimensional listening comprehension test process is visible: a consideration of the questions in the light of the oral text and the participants' knowledge and experience:

> RC: *"Människor kommer och pratar med honom när han inte vill bli störd"* *[People come and talk to him when he does not want to be disturbed]* (H11:10)
>
> MetaF: *"Puhuttiin valokuvaamisesta. En ollut varma häiritsevätkö ihmiset häntä. Luultavammin a oikein, sillä b liian looginen"* *[They talked about taking pictures. I wasn't sure if people disturb him. A is probably correct, because B is too logic]* (E11:9, B)

Conclusions

First, this type of introspection method, with short, written answers by the participants seems to have served its purpose: with relatively large groups of participants, it gives valuable information on the various comprehension problems faced and on the processes and strategies in use in a test situation.

Second, the applied method reveals differences in the ways participants act in a listening test situation, and these actions are directly related to their relative success in a test. Nevertheless, in order to obtain a more covering and valid picture of the different ways of processing at different items, the quality of the analysis will be strengthened at least by two quantitative means: 1) All the MC items in the test (there are 17 of them) will be taken into account, and 2) The amount of candidates will be increased to reach past 200. This will reduce the risk that the various processing differences emerging from the analysis of the introspective responses are merely due to the selection of this particular sample of learners.

Third, as a tentative conclusion, it would seem useful to help language learners become "metacognitive" actors, that is to assist them in obtaining awareness of the processes activated in language usage (and in a test situation!). Teaching monitoring, self-evaluation, learning strategies and comprehension tactics along with traditional and more linguistically focused language learning contents would certainly be one way of moving "upwards" on the ladder from one comprehension level to another.

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[1]The test of French as a Foreign Language at the Finnish Matriculation Exam consists of four separate parts: a test of listening comprehension, a test of reading comprehension, a grammar test and an essay.

[2]The abbreviation NonF implies that the response type "nonsense" is combined with a selection of a distractor, whereas NonC includes a correct choice.

[3] The participant code is given in brackets: The first letter and number is the participant number, the number after the two points indicates the points obtained at the first part of the test. A letter A/B/C after the commas mean a distractor selected. An arrow indicates a change of option between the two listenings.

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Appendix 1

In the following the instructions given to the test participants, the questions and options at items 3 and 4 and the transcribed related spoken text passage at the test of listening comprehension are presented. (The text and the MC items were originally used as a part of a test of listening comprehension of French as a foreign language at the Finnish Matriculation Examination in spring, 2002).

Test de compréhension orale du français
[Translated demo-version]

You will hear the following texts divided in passages. You will listen to each passage twice. After the first listening, answer the questions during the pause (70 sec): select the appropriate option. After the second listening, motivate your choice: briefly explain how you made your selection – or tell if you guessed. At the second listening you can also change your choice of option: mark the changed selection by a star (*).

	Motivation:
3. Comment Joël décrit-il sa vie? **A Il aime discuter avec les touristes** **B Il s'occupe des chômeurs du quartier** **C Il a envie de vivre dehors** 'How does Joël describe his life? A He likes to discuss with the tourists B He takes care of the unemployed in the area C He wants to live outdoors'	
4. Quel est le comportement des gens avec lui? **A Ils le dérangent dans son travail** **B Ils le prennent pour un photographe** **C Ils le traitent comme un touriste** 'How do people behave with him? A They disturb him in his work B They take him as a photographer C They treat him like a tourist'	

Text heard:
« Joël, 53 ans, est professeur de théâtre et vit dans un ancien magasin de fleurs, à Montmartre. « Quand arrivent les beaux jours, c'est génial. Je sors ma table, je travaille sur le trottoir. Je suis entouré d'arbres et de plantes, je me crois à la plage ! L'inconvénient, c'est qu'il y a pas mal de gens qui ne travaillent pas dans le quartier et qui viennent me parler quand je travaille et que je veux être tranquille. Alors je suis désagréable. En général, ils comprennent. Ici, c'est très touristique et les gens me photographient comme une personnalité bizarre, ce qui m'ennuie. Mais quand je suis enfermé, je ne me sens pas à l'aise. »

[Joël, aged 53, is a drama teacher and lives in an old flower shop, in Montmartre. « When the beautiful days come, it's great. I take out my table and work on the pavement. I'm surrounded by trees and plants. I feel as if I was on the beach! The inconvenience is the fact that there are

quite a lot of people who don't work in the area, and who come to talk to me when I want to work and be left undisturbed. So, I'm being rude. Most often they understand. It's very touristy here and people take pictures of me as if I was a strange person, and that annoys me. But when I'm locked in, I don't feel comfortable.]

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Immersion students in the matriculation examination Three years after immersion

Abstract

Immersion in Finland has grown in popularity since its start in 1987 in Vaasa/Vasa. Much of the popularity depends on the fact that immersion students learn their L2 effectively without losing their L1 skills or skills in other school subjects. Despite the positive effects of immersion there are still questions regarding how students manage higher education after immersion. In this article I will give a quantitative analysis of immersion students in the matriculation examination by focusing on the tests they participated in and the grades they received.

Key words: Swedish immersion, secondary schooling, the matriculation examination

Swedish immersion in Finland begins when the children are 3–6 years old and ends by the end of elementary school, in the 9th grade. Immersion students receive 50 % of their education in their second language Swedish according to modern theories of bilingualism (see e.g. Cummins 1984; Swain 1985; Krashen 1987). Immersion students are expected during their education to achieve the same goals in all school subjects as their peers in regular programs (Buss & Mård 1999).

The first immersion group in Finland started in Vaasa/Vasa in 1987. The group consisted of students with a homogeneous background and with no prior knowledge of Swedish and there were an equal number of boys and girls in the group. The immersion students were not tested before immersion and the group was made up of students with normal middle-class socio-economic background. (Laurén 1999: 90–91.) In the autumn of 2004, four immersion groups consisting of 72 students in total left elementary or primary education and immersion in Vaasa/Vasa and continued their studies in high school or vocational school.

In this article I will present the immersion students' results in the Finnish matriculation examination after secondary schooling. I have no intention (or possibility) to explain the factors that may have led to the results (e.g. how much of the results are due to the immersion program, or to individual or other factors) but only to present the immersion students' achieved results.

Secondary schooling traditionally opens the way to studies at universities and poly-technic schools (for the Finnish educational system, see http://www.oph.fi/english). At the end of their secondary education students participate in the matriculation examination. The purpose of the matriculation examination is "[…] to discover whether pupils have assimilated the knowledge and skills required by the curriculum for the upper secondary school and whether they have reached an adequate level of maturity in line with the goals of the upper secondary school. Passing the Matriculation Examination entitles the candidate to continue his or her studies at university" (The Matriculation Examination Board 2004). In other words, the matriculation examination is crucial when applying to universities.

During 2000–2004 the matriculation examination consisted of four compulsory and one or more optional tests. The compulsory tests were 1) the mother tongue test (in my material Finnish), 2) the second official language test (in my material the immersion language Swedish), 3) the foreign language test (English), 4) the general studies test or the mathematics test. Students could also participate in optional tests e.g. in other foreign languages, the general studies test (if not taken as compulsory) or the mat-hematics test (if not taken as compulsory). (The Matriculation Examination Board 2004).

Students can choose to participate at an advanced or at an intermediate level in the second official language test. The tests in foreign languages and mathematics are arranged at an advanced and at a basic level. In the mother tongue test and the general studies test there are no optional levels. The students have to take at least one test at the advanced level in a compulsory test. In general, universities grant more entrance points

for tests passed at the advanced level than for tests passed at the intermediate or basic level. (The Matriculation Examination Board 2004).

The grades given in the matriculation examination follow, more or less, the same scale from year to year. The proportion of the different grades is as follows:

Laudatur	(L)	5 %
Eximia cum laude	(E)	15 %
Magna cum laude	(M)	20 %
Cum laude	(C)	24 %
Lubenter approbatur	(B)	20 %
Approbatur	(A)	11 %
Improbatur	(I)	5 %

Grade L is the highest grade and to pass the test the student must get at least grade A. Grade I indicates that the test has not been passed. (The Matriculation Examination Board 2004).

The tests and the level of the tests immersion students participated in 2000–2004

During 2000–2004, 27 immersion girls and 22 immersion boys in Vaasa/Vasa participated in the matriculation exams. In total, these students participated in 227 tests, girls in 131 and boys in 96 (see Table 1). This means that on an average, the girls participated in 4.9 tests and boys in 4.4. The lower figure for the boys can partially be explained by the fact that some of the boys had not yet participated in all the compulsory tests.

Most of the students had participated in the compulsory tests in the mother tongue, in the second official language, and in the foreign language. It seems to be rather common for the former immersion students to participate in the advanced level tests both as regards the second official language and the foreign language. Of all the immersion students that participated in the second official language test 98 % chose the advanced test and of those taking the foreign language test 96 % elected to take the advanced test. It can be claimed that immersion has given the students a strong confidence in their second language skills as well as in their foreign language skills.

Table 1.   Immersion students and their participation in different tests and the level of the participated test.

	Girls (27)		Boys (22)		Total (49)	
	N	**%**	**N**	**%**	**N**	**%**
Mother tongue	**27**	**100**	**20**	**91**	**47**	**96**
Swedish	**27**	**100**	**21**	**95**	**48**	**98**
• Advanced	27	100	20	95	47	98
• Intermediate	-	0	1	5	1	2
English	**27**	**100**	**21**	**95**	**48**	**98**
• Advanced	25	93	21	100	46	96
• Basic	2	7	-	0	2	4
German	**9**	**33**	**3**	**14**	**12**	**24**
• Advanced	1	11	-	0	1	8
• Basic	8	89	3	100	11	92
General studies	**22**	**81**	**16**	**73**	**38**	**78**
Mathematics	**19**	**70**	**15**	**68**	**34**	**70**
• Advanced	3	16	6	40	9	26
• Basic	16	84	9	60	25	74
Total	**131**	**58**	**96**	**42**	**227**	**100**

Although it is obligatory to participate in the general studies test or alternatively in the mathematics test it seems to be rather common for immersion students to participate in both of them. As many as 78 % of the students participated in the general studies test, and 70 % of the students participated in the mathematics test. This can partially be explained by the fact that most universities give points even for the optional tests, in other words, students have a better chance of getting into the universities if they have participated in more than the four compulsory tests.

It seems to be more common for the girls to participate in both of the tests. The percentage of girls participating in both the general studies test and the mathematics test is higher than the percentage of boys participating in these tests. Despite the higher participation rate amongst girls it is interesting to note that boys tend to participate in the advanced test in mathematics more often than the girls. This can partially be explained by the fact that advanced mathematics is often required at universities

offering education in the field of technology. A greater number of immersion students are needed to confirm this picture.

There were 12 students who participated in an optional foreign language test. It was more common for the girls to participate in that particular test. My material offers an interesting observation: during the first two immersion groups there was only one student who participated in the optional foreign language test. In the two later groups 50 % of the students participated in the same test. This can be explained by the fact that the later groups had the opportunity to begin their studies in German as early as in the 5th grade, in other words, 3 years earlier than the two first groups.

Results in the mother tongue (Finnish) test

Research findings in immersion show that the immersion program does not threaten the students' mother tongue. Immersion students might however follow a somewhat slower pace in their mother tongue acquisition than their peer students in regular programs. (Buss & Mård 1999: 13; Elomaa 2000: 323–326; Swain & Lapkin 1982: 36–37). In the matriculation examination the students must "[…] write a stylistically and objectively acceptable composition about a subject that concerns his or her range of experience or all-round education. The mother tongue test is composed of two tests, and the candidate's grade is determined on the basis of the test for which he or she gained a higher number of points" (The Matriculation Examination Board 2004).

The results of the mother tongue test support the earlier research findings in immersion (see Figure 1). None of the immersion students failed in their mother tongue test and the number of weaker grades, A and B, is 12 percentage units lower than could be expected when using the scale that the matriculation examination board follows. The number of average grade, C, is rather high, 43 %. This means that it is 19 percentage units higher than usual. The number of results above average, grades M, E, and L, is one percentage unit less than could be expected. The great number of grade C is to be explained by the fact that there is a lower number of low results in mother tongue tests amongst the immersion students than is expected by the matriculation board.
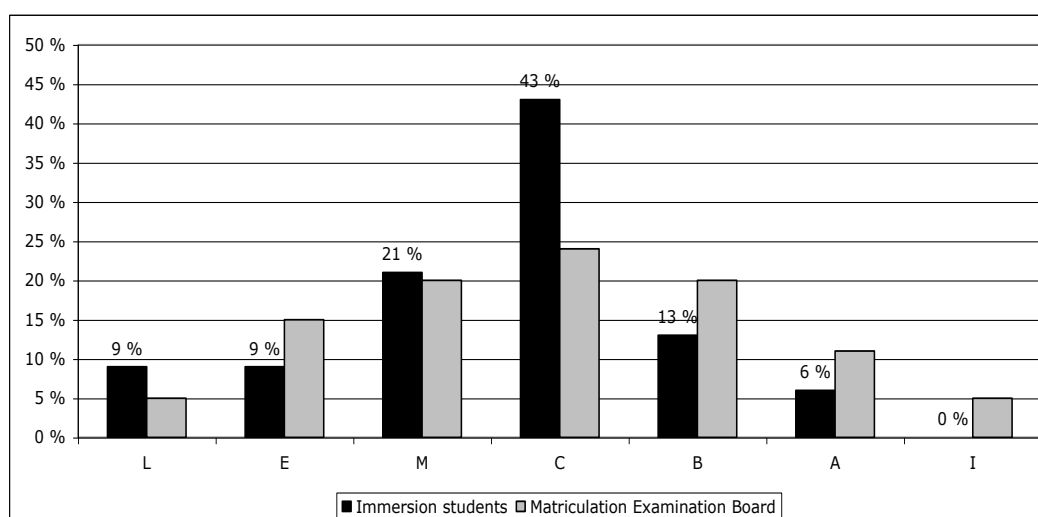
Figure 1. Immersion students' results in the mother tongue test.

Results in the official second language (immersion language, Swedish) test

Immersion students' knowledge of their immersion language is one of the most studied issues in immersion. Research has shown that immersion students gain better results in their immersion language than their peer students in regular language programs but that they fail to reach the level of native speakers (Allen, Swain, Harley & Cummins 1990). One of the immersion students' strengths is the ability to use the language in spoken communication. The matriculation examination does not test oral skills as it consists of "listening and reading comprehension and sections demonstrating the candidate's skill in producing written work in the language […]" (The Matriculation Examination Board 2004). A contrastive analysis of the immersion language and the mother tongue, e.g. in the form of translation, could be one exercise, although these skills are not part of the immersion curriculum.

It can be expected that the immersion students perform well in their immersion language, Swedish. None of the immersion students failed in their second official language test and the number of lower grades, A and B, was minimal, 4 % of all the results. The vast majority of immersion students, 81 %, got one of the grades above average, L, E,

or M. The number of immersion students receiving the best possible grade, L, is three times higher than expected by the matriculation examination board (see Figure 2).
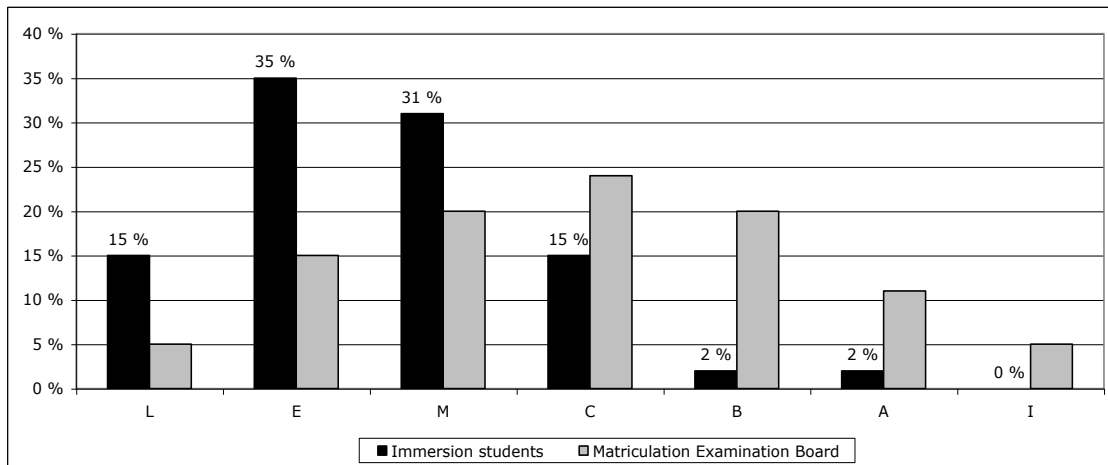

Figure 2.   Immersion students' results in the Swedish test.

Results in the foreign language (English) test

Research of immersion students' language skills has concentrated on mother tongue skills and immersion language skills and not enough research has been carried out regarding immersion students' language skills in L3 or L4. Teachers and students alike tend to believe that learning L3 and L4 is easier in immersion than in regular programs (Laurén 1999: 185).

Immersion students perform well in their L3 in the matriculation examination. None of the immersion students failed the test and no one got the grade A. The number who received grade B is one percentage unit higher than could be expected, but considering the low number of other lower grades the overall results are positive. The share of grades above average, L, E, and M, is 20 percentage units higher than is expected by the matriculation examination board (see Figure 3).
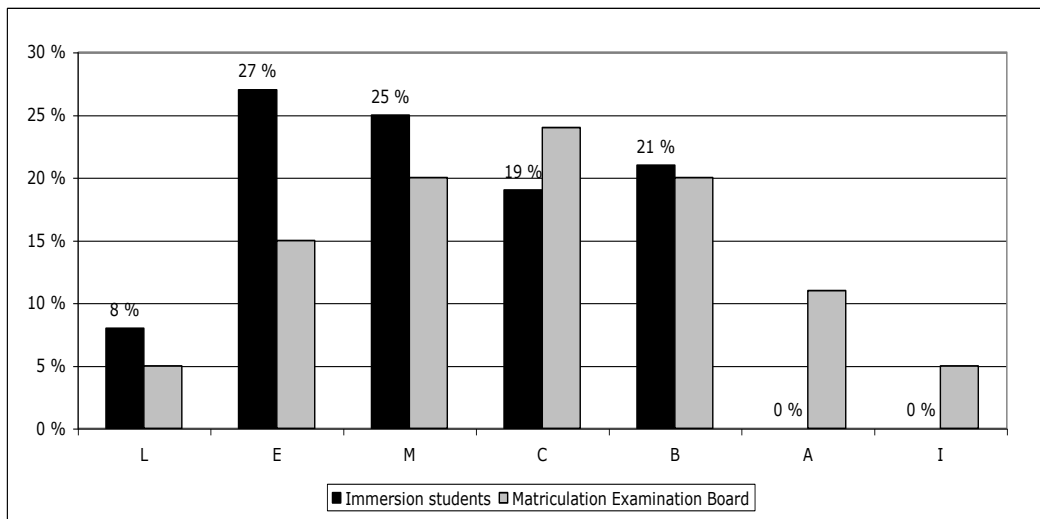
Figure 3.   Immersion students' results in the English test.

Results in the mathematics test

Research studies in immersion students' knowledge of mathematics have been rare in Finnish immersion settings. In the matriculation examination the students must "[…] complete ten questions. The candidate is allowed to use calculators and books of tables that have been approved by the Board as aids" (The Matriculation Examination Board 2004). Questions are often given in text form.

Figure 4.   Immersion students' results in the mathematics test.

The immersion students' results in mathematics show an interesting variation. None of the immersion students failed the test but no one got the best grade, L, either. The share of grades A, B, and C follows the scale given by the matriculation examination board. The share of grades E and M above the average is interesting. The share of grade M is eight percentage units lower than expected, but at the same time the share of grade E is 17 percentage units higher than expected. In other words one third of the immersion students participating in the test received the second best grade in mathematics. (See Figure 4).

Results in the general studies test

Research in immersion students' results in different school subjects in Finland has been mostly based on immersion teachers' analysis of their students' skills (Björklund 2002: 33). In the matriculation examination students answer eight questions of their own choice. The answers are given as written essays and the questions concern religion, ethics, psychology, philosophy, history, social studies, physics, chemistry, biology, and geography.

Figure 5. Immersion students' results in the general studies test.

Immersion students' results in the general studies test show that immersion students as a group perform as well as or even better than their peers in regular programs. None

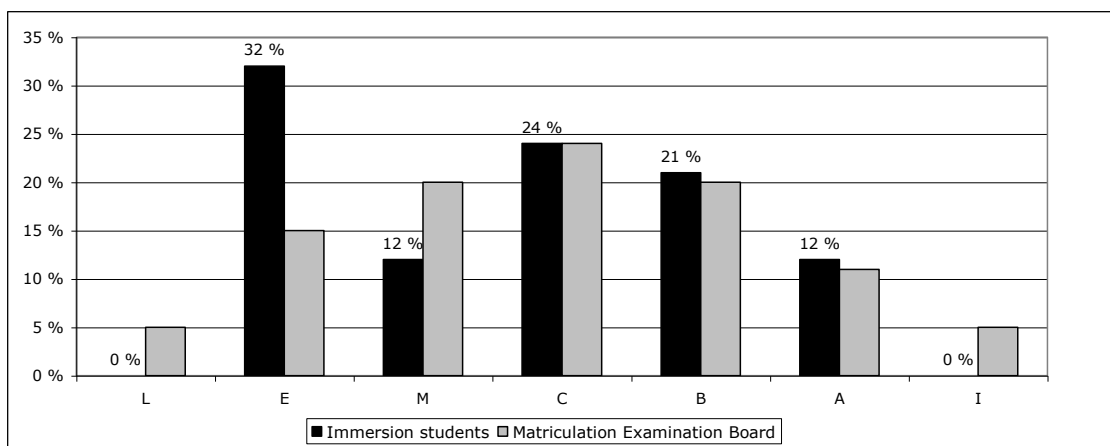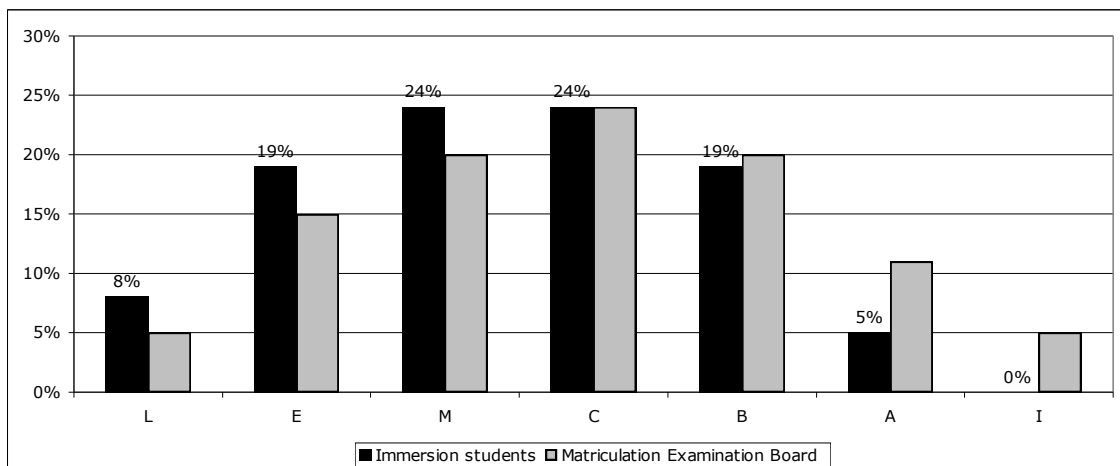failed the general studies test and the share of lower grades, A and B, is seven per-centage units lower than expected by the matriculation examination board. The share of grades above average, L, E, and M, is 12 percentage units higher than expected. (See Figure 5).

Results in the optional foreign language (German) test

The goal of immersion in Finland is multilingualism. Students are encouraged to study L4 in an early stage. In Vaasa/Vasa the most common L4 is German.
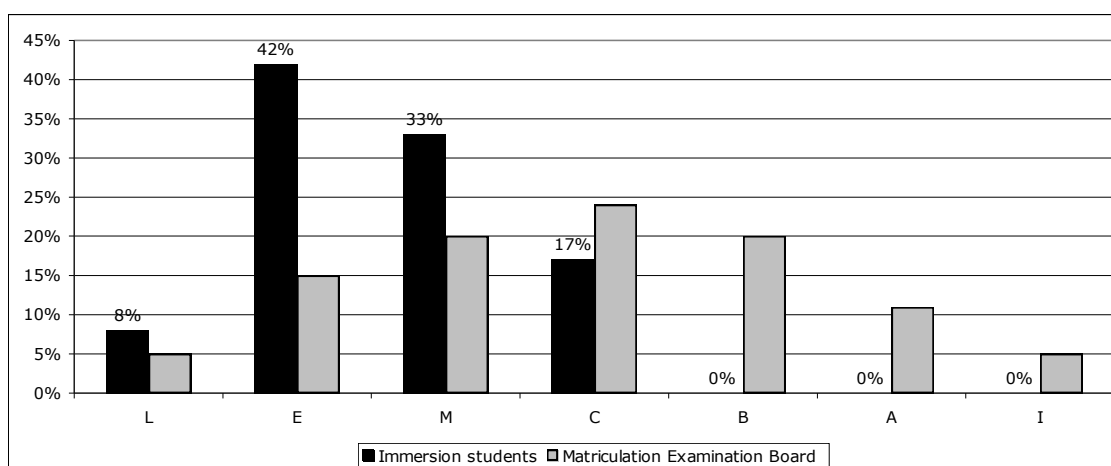
Figure 6.   Immersion students' results in the German test.

The number of immersion students' participating in the test in German is rather low, but the results show that they performed well in the test. There are no grades under the average amongst immersion students, and most of the students (83 %) received grades that are above average. (See Figure 6).

Discussion

Immersion students' results in the matriculation examination give support to the earlier research in the field and show that immersion students perform as well as their peers in regular programs. When the results in different languages (Swedish, English, and

German) are examined it is clear that immersion students outperform their peer students. It seems that immersion leads to better results in all languages, not only in the immersion language. By examining the results of the mother tongue test it can be observed that most immersion students produce texts that represent the average level in Finland amongst Finnish-speaking students. Interestingly, it can be pointed out that the low number of lower results indicates that immersion might support mother tongue acquisition amongst weaker students.

The immersion students' results in mathematics and in general studies show that they have learned different school subjects as well as their peers even though part of the education was given through the medium of the immersion language. The students are also able to present the knowledge they have acquired in written Finnish. The overall conclusion is that immersion does not threaten the students' further education, quite the opposite: in Finland immersion seems to give students a better chance of getting into higher education than regular programs do. Further studies are needed to confirm the findings and other factors that might affect the results must be taken into consideration (e.g. comparing immersion students in Vaasa/Vasa to other students in the same high schools to see if the general level of those schools is higher than the national level).

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The role of a second language as medium of expression in content-specific contexts

Abstract

In this article I present a study which focuses on how students with Swedish as their first or second language compose content-specific essays. The writers of the study consist of Swedish early total immersion students and Swedish-speaking students of the same age (15 years of age). The two groups were asked to write essays on two different content-specific themes: nutrition and baptism. When writing the essays, all students had to make use of a list of 22 content-related words given to them for each essay. My study aims at exploring the role of the medium, i.e. the use of a first or a second language, to express content-specific knowledge. I focus on how the writers choose to present their knowledge of the two subject areas when they build upon the list of 22 isolated content-related words and create a coherent text. Special characteristics of the two different subject areas are analyzed with the help of a readability formula and by discussing content-obligatory and content-compatible vocabulary.

Key words: integration of language and content, readability, content-specific vocabulary

In this article I will discuss some aspects on how content-specific texts in immersion students' second language (Swedish) are composed in the light of components of general and special purpose language. This perspective has not been investigated thoroughly in immersion research although numerous studies conducted in immersion contexts have stated that immersion students attain the same levels of academic achievement as comparable non-immersion students who receive their subject knowledge through a first language as the medium of instruction. Even though immersion students have received their subject knowledge in a learning environment where their second language has served as the medium of instruction, the evaluation of academic achievement has predominantly been conducted in the immersion students' first language. This is a logical consequence of other immersion research results which have shown that immersion students' second language proficiency tends to fall into two parts: Receptive skills are nativelike, while productive skills seldom reach the same high levels of nativelike mastery.

It is therefore not surprising that in subject matter assessment there are but a couple of Canadian studies where immersion students' second language is used as the language of testing as well. Day and Shapson (1996) refer to Morrison and Pawley (1983) and studies conducted in 1991–1992 in Alberta and in British Columbia. Immersion students in grades 3 and 6 in Alberta had a good command of subject matter knowledge (science, mathematics, social studies), but were not so able to demonstrate their knowledge and skills in their second language as when tested in their first language. Morrison and Pawley conclude that their grade 10 students did equally well in mathematics whether they were tested in their first or in their second language, while they performed less well in history in their second than in their first language. They see restricted technical vocabulary and reading comprehension difficulties as the main reasons for the differences in the results. The results of the study in British Columbia show that immersion students in grades 4 and 7 scored somewhat lower than native speakers of the same age, whereas grade 10 students scored somewhat higher. In this study too, linguistic factors such as difficulties with second language vocabulary were seen as reasons for diverging results. In addition, the length of time it seems to take for immersion students to fully express their academic knowledge in a second language was considered to be important when explaining the results of the grade 10 students.

The results of testing subject knowledge via a first or a second language in immersion are interesting as immersion students represent advanced second language learners who are able to express both a variety of different contents and specialized contents in their second language. At this level of second language development, there is no longer only a choice of using either a first or a second language to express the content but to express the cognitive concepts of different sciences as well. Every science develops a special purpose language (LSP) but the domain is seldom entirely explicitly taught; its rhetorics is in many ways expected to be automatically absorbed.

The immersion students' (grade 9) texts in my study can of course not be seen as representatives of explicit LSP texts and comparable to texts written by specialists in the field. I have chosen to start my analysis by looking at the readability of the texts and at

some aspects of the lexical level, but I am fully aware of the fact that specialized vocabulary is only one component of the rhetorics of a specialized subject field.

Presentation of the study

My study includes two groups of grade 9 students (15 years of age). The immersion group consists of 14 Finnish-speaking students (10 boys, 4 girls), who participate in an early total Swedish immersion program from kindergarten to grade 9. The control group includes 20 Swedish-speaking students (10 boys, 10 girls) of the same age as the immersion group. The students were asked to compose two different content-specific texts entitled Nutrition and Baptism. For each text, the students were asked to include 22 content-related keywords. All of these 22 keywords were isolated items in a word list and the students were asked to use them all. My research team at the university had selected the words and we had checked different textbooks available in Swedish that were appropriate for the students' age level in my study before we decided what keywords to include in the list. We had no information on what textbooks the subject teachers had used in the classroom, nor did we observe the subject teachers' use of special purpose language in class.

The list of keywords aimed at stimulating the students to write more content-specific essays. By listing a number of keywords we also had the opportunity to check the comprehension of the content-related words among the immersion students who faced two alternatives: i.e. either to exclude or include each keyword in their texts in accordance with their own judgment of the meaning of each keyword. In addition, it was also expected that the content-related words of the list would encourage students to expand their subject knowledge by using other content-related words not mentioned in the list.

Readability of the texts

When I started to read the students' texts my intuitive impression was that the texts entitled Nutrition were typically information-loaded, dominated by statements, facts and/or recommendations about what is good or bad for one's health, whereas the texts

about Baptism were descriptive; the writers concentrated on describing what happens during a baptism ceremony. In order to check my impression I began by analyzing the readability of the texts. Assessing readability of texts is a multifaceted process where linguistic factors interplay with both aesthetic-literary factors (the reading situation involves more than just the decoding of word and sentences) and pedagogical factors (e.g. the motivation of the reader). Although text linguists and sociolinguists have critized different readability formulas since these do not measure factors like textuality and discourse (see e.g. de Beaugrande 1988), formulas for assessing readability are still used in many linguistic and pedagogical analyses because they are so straightforward in their application. In fact, readability indexes seem to experience a renaissance as they can easily be applied using a computer (Larsson 1987; Cedergren 1992).

In order to get a quick overview of the readability of the students' texts I have used the index LIX which is based on a readability formula developed for Swedish (Table 1). Although the formula was developed as long ago as in the late 1960s (Björnsson 1968) it is still by far the most frequently used formula for measuring readability in Swedish texts. Unlike many other readability formulas it is not a regression formula, which gives values directly applicable to different age groups. Instead, it must be interpreted in accordance with different types of texts and different age-levels. Like many other formulas, it includes a lexical variable (word length) and a syntactic variable (sentence length). The word variable measures the number of long words (i.e. words with more than 6 characters) out of the total number of words, whereas the syntactic variable measures the number of words in each sentence.

Table 1. LIX, long words (%) and average sentence length (words/sentence) in my study and in a study by Danielson (1975).

	LIX	Long words (%)	Average sentence length
Björklund 2004:			
Nutrition			
IM	38.6	25.8	12.9
CL	41.0	25.5	15.5
Baptism			
IM	29.5	19.2	10.2
CL	31.4	18.0	13.3
Danielson 1975:			
Physics	42	29.7	12.4
Civics	44	30.7	13.2
Swedish language	39	23.8	14.9
Literature	39	25.0	14.3

According to a general LIX-table (20–25 very simple, 31–35 simple [prose, popular texts], 40–45 average [texts in newspapers], 50–55 complex [official documents and texts], 60– very complex) the texts in Table 1 are interpreted as simple or average texts. The readability index confirms my first impression that the content area is decisive for the readability level of the texts. Both immersion (IM) and control (CL) students' texts entitled Nutrition have an index approximating 40, whereas the texts about baptism give an index focusing around 30. In other words, despite the fact that among these students some of the writers use their second language as the medium of writing, the readability index does not primarily vary in accordance with the medium (first or second language) but with the contents of the texts. However, a comparison between the immersion and the control students shows that immersion students get a somewhat lower index than the controls in both context-specific texts. These factors indicate that the medium of writing may have minor impacts on the readability of the texts as well.

In Table 1 it is also possible to see how the two different variables of the index affect the readability level. The table shows that the percentage of long words in both groups

is more or less the same (~26 % in the texts Nutrition in both IM and CL, in the texts Baptism 19 % in IM and 18 % in CL), whereas the sentence length on average is 2–3 words longer in the control students' texts. Therefore, the tendency among the immersion students to have a somewhat lower readability index is caused by the relatively short sentence length, not by the use of long words.

For comparative data, results from a study by Danielson (1975) are also included in Table 1. In her study, Danielson has analyzed LIX values of a number of textbooks in different subject areas intended for students of different ages in Sweden. In textbooks for grade 9 in the subject areas physics, civics, Swedish language and literature the readability index LIX varied from 39 to 44. As expected, the index is higher in comparison with the students' texts, since the textbooks have been written by subject experts in the field but adapted to the age of the target group. Of the two student texts only the texts entitled Nutrition meet the standards of the textbooks in Danielson's study. The LIX index of these texts (38.6 and 41.0) is similar or somewhat higher than the index for textbooks in Swedish language and literature, whereas the percentage of long words is higher than that of the textbooks in Swedish language and literature but lower than that of the textbooks in physics and civics. The average sentence length of the texts Nutrition among control students goes well together with that of the textbooks in Swedish language and literature, while the similar sentence length among immersion students reminds one of the sentence length in textbooks in physics and civics.

The overall impression one gets of both the immersion and control students' texts Nutrition is therefore that these are texts where general and special purpose language interact. In the students' other texts (Baptism) the percentage of long words does not reach the same level as in the textbooks and the average sentence length especially among immersion students is relatively short. Hence, the texts entitled Baptism seem to be less content-specific than the texts entitled Nutrition, but there may of course be conceptual characteristics within each special subject field which affect the linguistic rhetorics of that particular field. LSP research into the Swedish language has e.g. shown that the length of terms and sentences vary in different subject fields (see e.g. Nordman

1992). In my study, the list of 22 content-related keywords helped the students to get more long words into their texts. Out of the 22 keywords for the texts Nutrition 15 words were made up of more than 6 characters and in the list for the texts Baptism half of the words on the list (11 words) were counted as long words.

Content-obligatory and content-compatible language

Another perspective on the use of content-specific traits in the students' texts is possible because of the 22 content-related keywords which the students had to include in their writings. I had expected immersion students to omit some what more keywords than the controls since I thought that their strategy would be not to include keywords if they were uncertain about their meanings. I got opposite results; immersion students used on average 21 of 22 possible keywords in both the texts Nutrition and Baptism, whereas control students used 20 keywords in both texts.

It is also likely that the keywords of the list may trigger off other content-related vocabulary in the students' texts. If this is the case, this kind of vocabulary shows that the writers are able to enlarge and deepen the content area and feel comfortable about doing so. In order to distinguish between keywords and other content-related words in the texts I have used the terms content-obligatory (CO) and content-compatible (CC) language. Immersion researchers (see e.g. Snow 1987; Snow, Met & Genesee 1989) coined these terms which were originally defined as two kinds of language objectives, and they use these when discussing teachers' planning of content lessons that contain language objectives. Met (1994) states that

> "content-obligatory language is language so closely associated with specific content objectives that students cannot master the objectives without learning the language as well" (Met 1994: 162).

Adapted to the writing task of the students, the keywords of the list form the content-obligatory language since the students cannot successfully complete the task if they ignore the keywords. Other content-related words are seen as content-compatible language. This term was originally used to cover the students' anticipated language needs in future content lessons and language demands beyond the classroom (Met 1994). In

the students' texts I have described content-compatible language as content-specific vocabulary which naturally will be used in content-specific texts as a natural complement to the content-specific keywords (e.g. weight, sin, suffer from, believe, allergic, eternal) and which shows that students have a knowledge of the subject field and are able to express this knowledge trough the medium of writing.

Table 2. Use of content-obligatory (CO) and content-compatible (CC) vocabulary out of the total number of words in the two content-specific texts

	CO %	CC %	CO+CC %
Nutrition			
IM	27.2	3.9	31.1
CL	22.4	5.7	28.1
Baptism			
IM	25.7	2.3	28.0
CL	22.0	3.9	25.9

Table 2 confirms the overall picture from the readability assessment that the texts Nutrition include more traits of special purpose language than the texts Baptism, as the content-obligatory and content-compatible language of the whole texts for both student groups are bigger in the texts Nutrition than in the texts Baptism.

Furthermore, the results of the analysis of the total content-specific vocabulary (CO+CC) in the texts show that the immersion group's vocabulary is more content-specific than that of the control group. In the texts Nutrition more than 30 % of the vocabulary is defined as content-related vocabulary among immersion students and in the texts Baptism the content-related vocabulary is 28 % of the whole text. Among controls the corresponding values are 28 % in the texts Nutrition and 26 % in the texts Baptism. However, the differences between the groups are small, as a more frequent use of pronouns instead of the repetition of content-specific words results in less content-specific vocabulary. The length of the texts is another factor which will have impacts on the content-specific vocabulary as well, and the control students wrote longer texts than

the immersion students did (the average text [Nutrition]: IM 103 words, CL 120 words, [Baptism]: IM 118 words, CL 129 words).

In addition, Table 2 shows that immersion students use content-obligatory vocabulary more frequently than control students do. Thus, immersion students seem to be more dependent on the given vocabulary list and focus on building contexts around these words more often than controls. However, when it comes to content-compatible vocabulary, there is an opposite trend as control students have a higher percentage of this kind of vocabulary in both texts. As a whole, the content-compatible vocabulary forms but a minor part of the whole vocabulary and only 2–6 % have been defined as content-compatible language. Even though immersion students use content-compatible vocabulary to some extent, their use of this vocabulary seems more restricted than that of the controls. This may be a consequence of the limited opportunities immersion students have to express in their second language their individual experiences in the two subject fields beyond the classroom. On the other hand, the analysis shows that the classroom context functions well in integrating both content and language and immersion students are capable of expressing explicit subject knowledge with the help of their second language.

A further analysis of the content-compatible language in the students' texts Nutrition and Baptism is shown in Table 3, in which the content-compatible vocabulary is presented as percentage of word classes.

Table 3.   Word classes (%) defined as content-compatible vocabulary in the texts Nutrition and Baptism.

| | Nutrition | | Baptism | |
	IM	CL	IM	CL
nouns	82.5	57.4	63.2	63.0
verbs/verbal expressions	7.0	31.0	31.6	25.0
adjectives	10.5	11.6	5.2	12.0

The major part of the content-compatible language in the texts Nutrition is clearly made up of nouns. More than half of the content-compatible language in the control group consists of nouns, but among immersion students as much as over 80 % of the vocabulary consist of nouns. In general, results from second language development studies have consistently shown that nouns are learnt more easily than verbs and adjectives which are not so context-fixed as nouns (see e.g. Dietrich 1990; Viberg 1991; Björklund 1996). This may also explain why the percentage of verbs/verbal expressions shows a relatively big difference between immersion (7 %) and control students (31 %) in the texts Nutrition.

In comparison with the texts Nutrition the texts Baptism show a profile which is slightly different even if the dominance of nouns prevails. The use of nouns is equally big (approximately 63 %) in both the immersion and the control group. As for verbs, immersion students use relatively more verbs/verbal expressions than the control students do (IM 32 %, CL 25 %), which is somewhat surprising if developmental phases are to explain the differences. Another explanation may be that the use of special purpose language, which apparently occurs less frequently in these texts, has consequences also on the variation of verbs included in content-compatible language. The use of adjectives is modest in both the texts Nutrition and Baptism, but controls use adjectives more often than immersion students do.

Conclusions

The aim of the presented study in this article was to investigate how the medium (a first or a second language) fosters or restricts the writers' possibilities to engage in an extended discourse or context, which can be identified as typical of the subject area. As a whole, results of the readability assessment show that the linguistic means of expression by the second language writers (immersion students) were sophisticated enough to allow them to produce a subject-specific outcome. The readability index LIX was approximately 40 in the texts entitled Nutrition for both the immersion and the control group and the texts entitled Baptism had an index of approximately 30 in the groups. Thus, texts about nutrition meet the LIX standards of textbooks used for grade

level 9, and these texts have a more focused content-specific orientation in comparison with the texts about Baptism.

Although the readability index is similar for both groups and the value of the index is primarily determined by the content, not by the medium, further analyses indicate that a second language as a medium of expression has minor impacts on the use of content-specific traits. The percentage of long words used in the texts is the same in both groups, but on average the immersion group writes shorter sentences than the control students. An analysis of the content-specific vocabulary of the texts shows that the percentage of content-obligatory vocabulary is higher in the immersion students' texts than in the controls' texts, while the percentage of content-compatible language is higher in the control students' texts than in the immersion students'. On the other hand, the use of content-compatible language per se among immersion students shows that they are capable of naturally adding content-related words into a content-specific discourse even if they may not have experiences of the subject areas in their second language beyond the classroom.

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Toward a working theory for physics CLIL classroom

Abstract

This paper presents a working theory related to comprehensive learning in physics CLIL classroom. Because learning physics and second language acquisition takes place simultaneously and can not be separated in practice, the theory of learning is composed of selected current theories of both learning physics and second language acquisition. This working theory is significant for planning special exercises which support the dual learning goal - language and content, both demanding and complicated learning tasks. Additionally, a working theory is needed to assist in curriculum design and to inform background theory for scientific work related to the learning of physics through a second language.

Key words: physics learning, conceptual change, CLIL, second language acquisition

Introduction

Both second language acquisition and the learning of physics have been subject to intensive research. Consequently the conceptual content of both domains have been researched and well-documented, but the research in which the focus would be the combination of the second language as used as a medium of physics instruction is much less researched. There are very few if any scientific papers dealing with the learning of physics through a second language.

The purpose of this paper is to combine current theories of the learning of physics and second languages and to construct a working theory to inform and guide the planning and successful teaching of physics through a non-native language. Additionally, a working theory will be discussed as it also forms an integral part of the theoretical framework in a licentiate thesis that the present writer is preparing, titled *A Case Study on the Students' Attitudes towards Learning Physics through English as L2*.

In order to plan good lessons we need at least two tools: one is the knowledge of the curriculum and the other is the knowledge of how learning takes place. CLIL lessons have a dual learning goal – the student is learning content and language at the same time. Therefore it is necessary for a CLIL subject teacher to know the theories behind both language and contents learning in order to be able to plan exercises that support both learning targets. The same need lies behind curriculum development. Well-balanced curriculum planning has to be based on both sets of theories.

Later on in the paper, the language acquisition theories will be integrated with the subject specific theories of learning of physics concepts. This is necessary because it is not possible to separate learning physics and learning language in CLIL classroom but instead: both are tightly connected in the learning process. This calls for one unified theory for learning which takes both learning goals into consideration. Furthermore, the learning of physics concepts takes place in various ways, not only in connection to reading and writing. Personal observations of the world around us are the corner stones of acquisition of physics concepts. Therefore reading, writing and oral interaction do not provide enough information for learning natural sciences like they do in language acquisition process. Thus, the theories of language acquisition are not enough for physics CLIL classroom.

Background

The CLIL programmes in Finland include formal language lessons in addition to the subjects taught through the second language. It is especially important to take care of the learning of the Finnish, in particular the equivalents of the concepts taught in all the subject areas in order to guarantee the possibilities for further studies for the students from the Finnish speaking homes. There are, however, international schools in Finland who have students with mother tongues other than Finnish. They may study together with the Finnish speakers in CLIL programmes, having English as a second language in common.

Theories of second language acquisition

Krashen (2004) states that "we acquire language when we understand messages, when we understand what other people tell us and when we understand what we read". According to Krashen (2004) the Comprehension Hypothesis is the core of current language acquisition theory. It has lately replaced Krashen's former Input Hypothesis, which he still considers to be acceptable but less accurate than the new hypothesis.

According to the Krashen's (2004) Comprehension Hypothesis second language acquisition is a subconscious and gradual process unlike learning which Krashen and Terrell (1983: 26) define to be a conscious process. This acquisition of L2 takes place when the acquirer internalizes comprehensible input or language, which is a bit beyond the current level of the students' competence (Krashen 1985: 32). The grammatical structures of both L1 and L2 are adopted in a predictable order. High anxiety or in other words the affective filter prevents the acquirer to utilize the input he receives by not letting all the comprehensible input to reach the brain. Krashen defines the role of grammar by The Monitor Hypothesis. The student may apply a grammar rule consciously if the three conditions are fulfilled: 1) The student knows the rule. 2) There is need to focus on form. 3) The student has time to apply the rule.
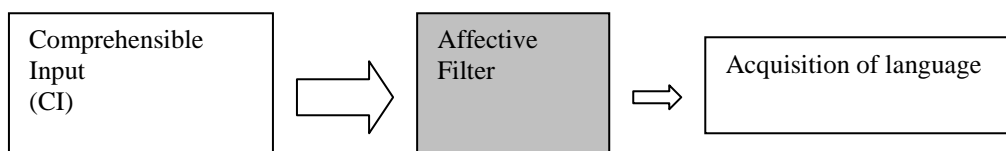

Figure 1. Acquisition of language according to Krashen's (2004) Comprehension Hypothesis.

Cummins (1984: 137, originally 1979) draws a distinction between basic interpersonal conversational skills (BICS) and cognitive academic language proficiency (CALP). According to Cummins (1984: 136) this distinction refers initially to the different time

required by immigrant children to become fluent in L2 as compared to the academic language skills needed in school tasks. According to Cummins (1984: 138) it is a common misunderstanding that the school should develop only CALP and that it would be some how superior to BICS. Cummins claims that CALP isn't necessarily superior and subsequent to BICS but rather conceptually distinct. Both are highly complex and linguistically and cognitively demanding. They both develop in social interaction but in different ways. BICS is a tool and a base in developing CALP. It is not enough that the school tends to focus to expand different subject specific fields of academic language repertoire using BICS. Instruction concerning complex issues, like physics, needs also more developed BICS. On the other hand, BICS is developed simultaneously.

According to Krashen (1985), reading is vital for academic development since academic language is mostly used in written text. Unlike Krashen, Cummins doesn't see reading and hearing to be enough for language acquisition but says that in addition to them, collaborative learning and writing helps the students to internalize and more fully comprehend academic language tasks at hand as they get feedback from their peers and teachers (Cummins 1984: 138–139).

Swain (1985: 236, 248) agrees with Krashen's theory in some respects and admits that input is essential to the acquisition of a second language. However, she doesn't think that input alone is enough to make sure that the students' performance will become native like. In accordance with Cummins, Swain (1993: 159) proposes that collaborative learning, writing and speaking play a role in language acquisition process because they provide possibilities to meaningful practice. The opportunities to use the spoken language in the class increase fluency. In addition to that Swain (1993: 159) claims that using and producing the target language make the learners to recognize the gaps in their knowledge base. It might then lead to the identification and paying attention to relevant input. Also feedback by the teacher or peer learners may lead the learners to change their output, but the external feedback not essential for the noticing the gap in knowledge. It can be generated also by internal feedback by the learner himself (Swain & Lapkin 1995: 373, 386). Swain and Lapkin (1995: 372, 374–375) call this 'pushed

output' because the learners may be pushed to process the language beyond their current level of performance in order to fill in the knowledge gap. In other words, learners become aware of what they do not know yet which guides their attention to the relevant input and facilitates acquisition process. It should be noted that the above is not in contradiction with Krashen's theory; only the role of input is different.
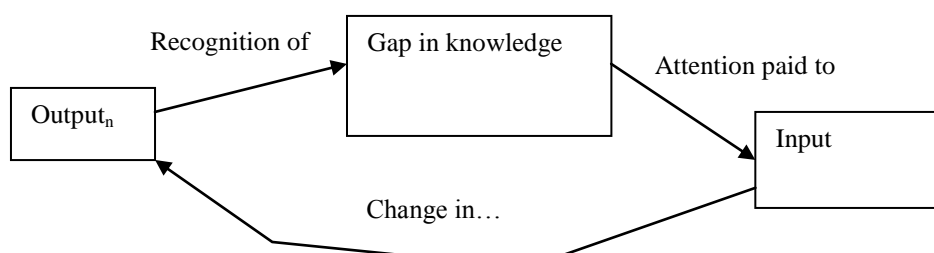
Figure 2. The interaction between the output and the input in the second language acquisition process.(modified from Swain 1993: 388) The letter n refers to the original output (n=1) and modified outputs (n=2,3,…) as the acquisition process goes on.

Learning of physics' concepts as conceptual change

Learning physics and the acquisition of physics concepts is a complicated process which is based on our observations of the world around us. In this paper, learning physics is explained from two points of view: Kolb's (1984) experiential learning and conceptual change (Vosniadou 2002a; Vosniadou & Verschaffel 2004). Kolb (1984: 38) defines learning as "the process where knowledge is created through the transformation of experience", whereas Vosniadou (2002a: 61) sees learning physics as conceptual change. Both have in common that observations are the basis of learning physics and that learning is continuous process.

Kolb's Cycle of Experiential Learning has been widely used as a theory of learning in science. Kolb (1984: 43) claims that learning can start at any of the four steps presented in Figure 3 and that learning is more like spiral than actual cycle. The cycle presents

learning physics taking place in a very similar way to the way that scientific theories are formed. Although, as Kolb himself admits, there are severe limitations in the learning cycle (Kolb 1984: 59; Greenaway 1995) in that the theory does not take into consideration the developing nature of learning, it is still a well-tested model for learning.
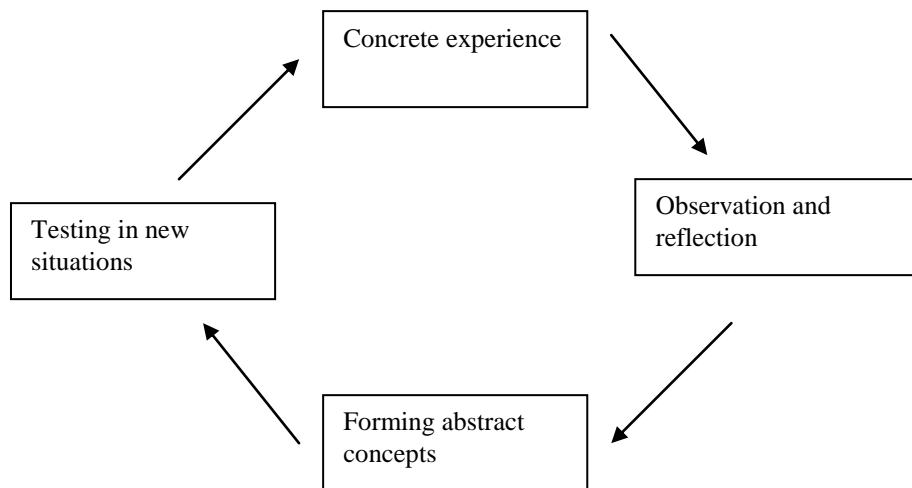
Figure 3. Experiential learning cycle by Kolb (1984: 42).

Physics is all around us and behind every action we make since we were born. It is by means of physics that school-aged students construe their own individual pre-instructional thoughts and beliefs about the phenomena and concepts to be taught, which are based on every day observations and which are not necessarily parallel to scientific views (Duit & Treagust 2003: 671; Vosniadou 2002a: 61–62). Vosniadou (2002a: 61) calls these pre-instructional thoughts and beliefs 'naïve physics' and they act like lenses through which we receive physics instruction at school.

Initial models are coherent and sometimes in contradiction with scientific models pre-sented by physics instruction. According to the conceptual change view of learning of physics concepts, initial models need to be abandoned and replaced with scientific models during the learning process. If the learner is not conscious of his own mental

models, the resulting learning may be partial, as presented in the Figure 4 where initial mental models of Earth are maintained along with new information. The result is synthetic model, which has characteristics of both models. This example shows clearly how 'naïve physics' can be the source of misconceptions and even sometimes prevent the learning of correct scientific models. It is therefore vital for learning that the learners are aware of their mental models of instructional topics. Conceptual change is a gradual process because initial models are deeply accepted and supported by observations of everyday life.
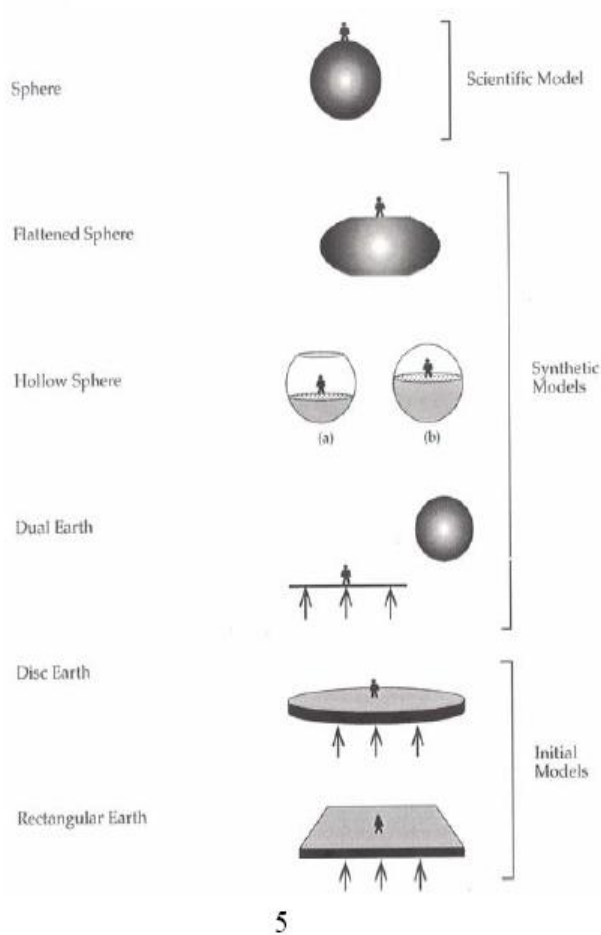
Figure 4. Mental models of Earth according to Vosniadou's studies (Vosniadou 2002b: 5).

Duit and Treagust (2003: 672) distinguish between two different types of conceptual change, weak knowledge restructuring or conceptual capture and radical knowledge restructuring or conceptual exchange. In addition to that, they mention that there is no mutual understanding in the literature whether knowledge accretion is a third level of conceptual change or not. However in this paper it is included because the development and diversification of physics concepts are an essential part of work of physics instruction.

The fact that naïve physics exists and affects the learning of physics concepts makes it highly understandable why it is so difficult to learn such concepts as force, energy, the shape of Earth etc. the scientific nature of these concepts is in contradiction with our everyday knowledge.

Learning physics through a second language

Putting all separate theories presented above together yields one unified model of learning both physics concepts and language at the same time in the physics classroom.

Figure 5 presents how previous knowledge affects the learning of both content and language. Krashen's (2004) Comprehension hypothesis takes into account the role of affections in learning. Physics sometimes suffers from 'bad reputation' as a difficult subject which is impossible for everybody to learn. If a student feels that learning physics is demanding, learning it through a second language may feel distressing. In the physics CLIL classroom it is even more important to support learning both language and content by taking affective issues into consideration.
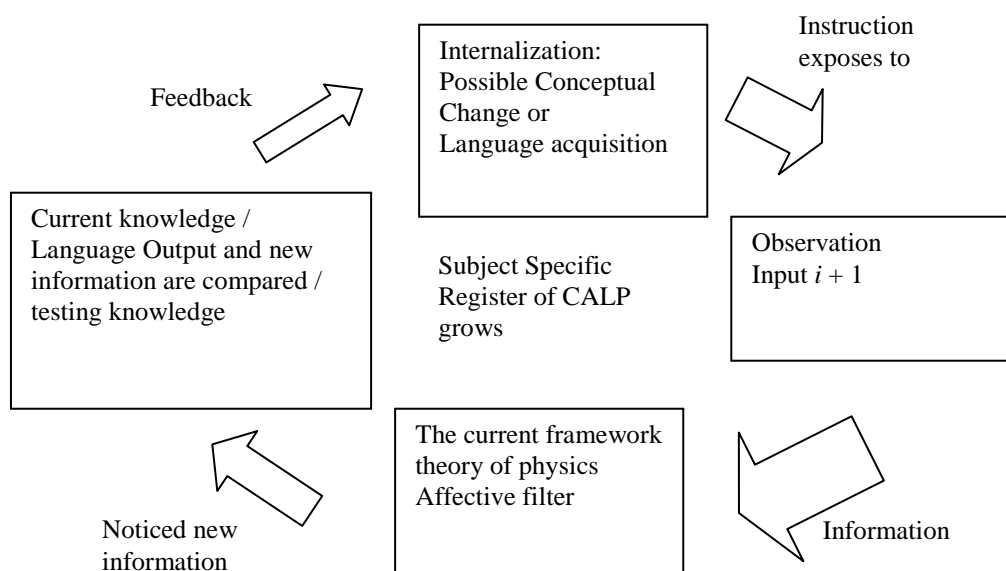
BICS forms the base on which learning is grounded.

Figure 5. The gradual and continuous process of learning both physics and second language in CLIL classroom.

Conclusion

From the language acquisition point of view, the physics classroom provides the students opportunities to use such areas of language proficiency in a meaningful way that are not very often supported in mainstream formal language lessons. For instance, the passive voice is abundantly used in laboratory reports and textbooks, and the hand-on activities continuously provide a number of possibilities to use scientific vocabulary in a variety of communicative situations.

The teachers are faced with a demanding task in developing or finding exercises that support both learning goals. Fortunately, it seems that those instructional strategies/ methods that take into consideration the roles of both comprehensible input and output in the acquisition process also seem to support the internalization of physics concepts. This is possible in peer and student-teacher interaction which give the students oppor-

tunities to use their knowledge actively, and what is more, to compare it with the others' mental models and to test them accordingly. From the viewpoint of acquisition of physics, negotiating conceptual meanings in two languages supports content area learning, because the similarities and differences of concepts of both languages must be compared. Comprehensible input in two languages may provide the students with more examples and observations about the contents of physics concepts. Classroom discussions are not traditionally used extensively in physics instruction. Their use should be encouraged, as they seem effective instructional strategies in CLIL classrooms.

Physics textbooks, teacher and peer talk, all provide versatile input. It is important that the teacher be aware of the students' current language level in order to make sure that the input is comprehensible. It also seems that the role of affective factors is essential and should be taken into consideration in physics instruction in CLIL classrooms. The role of affective factors has traditionally been non-existent in physics instruction.

On the basis of the above theoretical discussion, it is obvious that by employing relevant methods of work it is possible to support the twin goal of CLIL instruction, i.e. to facilitate the learning of both content and language at the same time. Furthermore, the Finnish school curricula are based on the socio-constructivist notion of learning and teaching, which means that tasks that involve social interaction are in congruence with objectives and requirements arising from various sources.

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Language, textbooks and science content learning in South African schools – the case of the Science for All project

Abstract

The paper deals with the attempt of two projects to influence the teaching of "content subjects" in South African schools, particularly black African schools. The first project was a 3-year research programme in language and learning, called the Threshold Project. The second is a curriculum materials programme, Science for All, which draws on the Threshold Project and attempts to apply its principles for the design of text and the mediation of tasks in the classroom. The context is that most teachers are not well-educated in the subjects they teach, especially science, and in most cases teaching happens in English which not a first language for either teachers or pupils. The paper discusses the demands in writing for such a context, and the innovation issues that emerge when the texts are used by teachers. The differences between South African bilingual education and European CLIL are briefly touched upon.

Key words: textbook, mediation, language, science, bilingual education, primary school

Origins of the text materials in the context of educational change in South Africa

The *Science for All* project and its textbook series represent an attempt over the last 15 years to address the needs of young, mainly black, South African learners. The Science for All project uses, as part of its approach, principles derived from the Threshold Project[1] (Langhan 1993; Macdonald 1990a, 1990b, 1990c, 1990d, 1990e, 1993; Van Rooyen 1990). This was an educational research project which began in 1985, looking at issues arising from children changing from an African language to English as their medium of instruction in Year 5 of primary school. At first glance it seemed that these difficulties arose purely as a result of ineffective language teaching methods. However the complex nexus of factors that constitutes African primary education required a closer look at different aspects of the teaching-learning situation. A three year research project was initially commissioned 1986–1988, but work continued until 1993.

In the course of the project, a broad range of tasks were covered, including language testing, cognitive developmental research, materials development and observations of classroom practices. The results of the research are contained in six final reports and two dissemination reports[2] (see references[1]). The overt cause of difficulties within the education system was a language policy that traumatizes both teachers and pupils. Inadequate time and materials are spent preparing children for a change in the medium of instruction, and the curriculum is not developed carefully enough to lead children to an understanding of the large number of abstract concepts needed beyond Year 4. With respect to print materials, the Threshold Project concluded that textbooks could not deal simply with the exposition of content but had to be more like workbooks, structuring the learning tasks and mediating the content to both teacher and learner.

The *Science for All* series, developed over the last decade which has produced learner and teacher material for Years 4 to 9, represents the most complete applications of principles advocated in the Threshold Project.

The *Science for All* project had begun work on curriculum materials for Years 7 to 9 in 1990, at a time of turmoil, when schooling was increasingly ineffective for the majority of children. It began with certain broad commitments, such as that *learning how to learn* from a book was as important as learning the *science content* in the book.

As the momentum of political change in South Africa grew, educational change accelerated. Under the apartheid government, education policy had been made separately for the African section of the population. African children did a subject called Environmental Studies until Year 4 (in the predominant African language in their area) before beginning Science in Year 5 (in the medium of English). By 1995 this was politically unacceptable and an official decision was made to introduce science as a subject in Black schools in Year 4, to be taught through the medium of English (in common with science lessons for most of the rest of the population). To write science materials for this Year 4 group was a particular challenge to *Science for All*.

Teachers in the primary and middle schools are in general not educated in science nor trained in science teaching. Content subjects like science or environmental studies were taught by what the Threshold Project calls the "rote-rhythm method" (the pupils chanting rehearsed answers in unison), with very impoverished use of language in both mother tongue and English. Textbooks were commonly available but mostly presented factual information, were often poorly constructed as regards language and illustration (Langhan 1993), and were driven by the nature of the subject matter rather any understanding of the learners' needs.

Science for All adapted an approach advocated by the Threshold Project (Macdonald 1990a, 1990e) that children's books should be hybrid textbook-workbooks, in an effort to ensure that children would actively participate in the construction of their own know-ledge. A further basic requirement was that the **learner** materials should mediate the tasks to the teacher as well as to the learner. The reason for this requirement was that the predominant mediation style in schools was based on the notion of the teacher as the-one-who-knows, coming to the aid of the-one-who-does-not-know (the pupil). A result of this paradigm is, crudely, that the teacher shows and learners imitate. The learners usually reproduce only the surface features of a task, conceptually and linguistically. The reasoning behind the learning product, and the other possibilities in the task, are not explored and perhaps not even recognised.

What Threshold aimed at was the notion of the learner-as-autonomous-problem-solver. In this paradigm it is vital for the teacher to understand the underlying demands of the tasks which she sets for the learner; this means she must structure the task with insight, and be able to scaffold the task as the learner attempts to generate the product. This requirement that books should mediate the task to the teacher as well as to the learner creates a major challenge for the designers of curriculum materials. General advice to the teacher is not adequate – the **learner's material** must unpack the task, and deliberately develop the language and cognitive skills which will be needed further on.

In this paper we will leave aside the more typical science education issues, such as managing practical work, and try to deal only with the CLIL aspects of the project materials. In the next section we show that the presuppositions which hold in the European context are radically different from those which hold in typical African contexts.

Theoretical framework

The context of the two projects was unlike that in which most bilingual education (CLIL) projects in Europe might work. Immersion models are not applicable in a Southern African context where the vast majority of children are from a literacy-poor background, their homes do not support the development of the L2 and their teachers have, in general, not moved far from their educational beginnings in the same environment.

Probably the most central issue revolves around the status of the second language of Medium of Instruction (MoI) used across the curriculum. The European CLIL paradigm (see references), although it does not seem to specifically say so at this stage, would presumably make the assumption that the target MoI is a high status international language (with its own literature, newspapers etc) that parents would aspire for their children to learn. In Europe the target MoI would largely be English, but in the United Kingdom, it would be French, German and Spanish, for example. But, crucially, the children's home language is **also** a high status language in the same way, and children would be exposed to early literacy events in their home language before they come to school. In fact, their mother tongue actually supports the development of the new MoI's used in CLIL. We say this because of the claims made Scandinavian researchers such as Phillipson, Skutnabb-Kangas and Africa (1986), where they show that if the home language is not a high status language with all the accoutrements of advanced literacy, then using a high status second language as the MoI is unlikely to help the children learn effectively.

In Africa, because of questions of national unity (in countries with many official languages), and in South Africa (where the indigenous languages were stigmatised because of their associations with apartheid) the choice in primary education has, for the last two decades, been to go for French (in Francophone Africa) or English (in Anglophone Africa). This has led to impoverished education in most cases, and there is a very strong call recently to return to the African languages, and make a slow transition to English or French as MoI, as late as possible in the curriculum (ADEA/GTZ/ Commonwealth Secretariat/UIE 2005).

It is the work of Cummins (Cummins & Swain 1986; Cummins 1978, 1980, 1984, 2000) and O'Malley (1988), whose ideas have remained robust (cf Smyth 2002), which guided some of the thinking of the Threshold Project specifically with application to the role of the two languages in African primary schools. Smyth (2002: 86) has this to say:

> Further research … indicates that well-developed, home-language skills lead to enhanced additional language learning, developing out of learners' cognitive and metalinguistic skills. This suggests that home-language proficiency plays an important role in making input in additional languages comprehensible. Thus, in order for learners to be successful to be successful in learning through an additional language, they need to first acquire academic language proficiency in their home language. Once this has been established, it then transfers to the learners' additional language, often with positive effect… .

The proposal that children's second language competence is partly built on the level of competence achieved in their first language led Cummins (1978, 1980) to develop his "Interdependence Theory" and his "Common Underlying Proficiency Hypothesis". It was suggested that there is a common underlying proficiency through which bilingual children can access skills and concepts developed in their home language and then use them in the MoI and vice-versa. Cummins (1984: 143) graphically represented these ideas as seen in Figure 1 below.

The guiding idea then, is that the children learn as much as is possible in their home language before making a transition to using English to learn that subject.
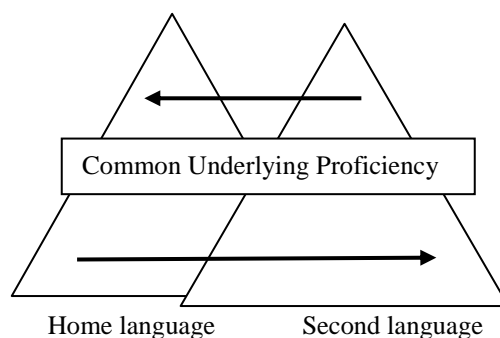
Figure 1.   The Interdependence Hypothesis (Cummins 1984: 143).

Another important guiding principle which was emphasised in the Threshold Project and adopted in Science for All is the distinction between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP) (Cummins 1980). The first is typical of the second language classroom, while the latter is required for CLIL or learning across the curriculum. Another useful distinction that helps us articulate the task demands of the two is the distinction (Cummins & Swain 1986) between context-embedded and context-reduced communication. If we are to argue that BICS is cognitively undemanding, and that CALP is cognitively demanding, then we can develop a gradient which can guide the development of materials: cognitively undemanding/context-embedded cognitively undemanding/context-reduced cognitively demanding/context-embedded cognitively demanding/context reduced. O'Malley (1988) in developing a cognitive academic learning approach (CALLA) drew up this contrast in a two by two quadrant, and showed what types of tasks should appear in each. The idea for us is that children's materials should move from the first to the fourth of these types, in order to lead children from simple BICS to demanding CALP. The fact that deep level CALP may take a long time to develop is something acknowledged in the African literature to date (cf. ADEA/GTZ/Commonwealth Secretariat/UIE 2005), but not to our knowledge, in the CLIL literature.

Finally, in the Threshold Project materials development, the importance of process skills in the learning of science was acknowledged. The concept of process skills was developed to show the component processes which are involved in thinking in science (although it is readily admitted that children are not in any way to be regarded as little full-blown scientists) and partly dependent upon an understanding of Piagetian stages

of cognitive development, which Harlen (1985), an important proponent, was well-placed to understand. Getting teachers to understand the nature of science investigations in terms of process skills is not only sound cognitively, but also pedagogically helpful in getting teachers to tease out all the kinds of skills which might be considered in putting together a science investigation for children, as well as providing a sound rubric for assessment.

This then is some of the theoretical thinking which underlay and continues to underlie state of the art work in science with school children. We go on now to illustrate the very real deficiencies that underlay the kinds of materials that existed in schools when the Threshold Project was analysing the nature of teaching and learning in Year 5.

An example from two sets of grade (year) 4 materials

By way of illustration, we compare a traditional Grade 4 text, a common type, with the text developed by *Science for All*, also for grade 4. The topic is leaves of plants.

The traditional textbook asks the children to study the leaves of various plants. After giving a set of drawings of five leaves (with no indication of what the children should do with them), a list of **activities** is given:

    1 Pick one leaf from five different leaves in your environment.

    2 Look at the shapes of the leaves.

    3 Look at the edges of your leaves.

    4 Look at the colour of the leaves.

    5 Draw three different leaves.

The book does not draw further upon the children's own activities. Rather, the book continues with a summary, ***What have we learnt?*** In a green box children are given the following information:

> 1. Plants have **green** leaves.
> 2. The leaves can be **round, oval or long.**
> 3. They can have **smooth edges** or **serrated** edges.

There is a high probability that children will get tested on the information in the green box, while their own activities are not utilized.

The *Science for All* grade 4 book deals with the same topic in a different way. The children are given a double page spread of information in text and colour pictures.

The children start with a puzzle in which they decode scrambled names of six common plants with the aid of a word-box containing the correct names plus one redundant name. Then the important point is made that each kind of plant has its own kind of leaf.

The children next make rubbings of the backs of five leaves they collected. They need to plan the use of the page so that the leaves' images will fit in the space (the process skill is recording). The children then try to use their expressive language in describing the sort of plants that their leaves came from. They observe and record the edges of their leaves, and then go on to use their vocabulary to describe how the edge of illustrated leaves differ. By this stage in the year, we expect that they will cope with a number of English words but we encourage the teacher to allow them to use whatever language they can best express themselves in.

In the second activity, children are asked to work with two variables – shape and edge. The children first make groups with the real leaves they collected. They look for leaves that have a certain edge and a certain shape, and they name these. This work can be done in small group discussion. Then the information is transformed (another process skill) into a table. The parameters of the table are drawn up, and the children copy it into their notebooks, and then complete it. This table can be used once more – when the children use it to classify the leaves which they themselves collected. This unit takes about 2 hours to teach if used in the way it was designed.

In the *Science for All* text on the leaves topic, the science knowledge is addressed (and extra information on leaf structure is provided for the teacher) but the Teacher's Edition makes clear that the focus of the lesson must be on the skills of observing, recording, comparing and classifying with the use of a 2 x 2 variable table. The project takes the view that the generative skills of language and cognition must be developed ahead of detailed science knowledge, lest that knowledge become inert baggage which the children cannot transact over.

The Teacher's Edition pages include the same pages from the pupils' book but they are overprinted with notes in red ink, giving answers to questions, identifying process skills and showing the focus of the lesson.

Building the children's confidence to express their own ideas

In years 4 and 5 we encourage teachers to let children use their most fluent language (which might be the mother tongue). This is often contrary to the "English only" policy of the school. We call it the "MFL-first, then English later" policy.

The aim is to give children the confidence to participate in building the ideas-resource of the class for the present set of lessons. To communicate one's own ideas is to "be a somebody" in a group. It also allows the teacher to find out what ideas the children hold; the teacher (depending on her view of learning) may then respond in various ways to this knowledge of what the children believe.

Example – an extract from a content-and-language lesson

The grade 4–7 materials, each year, make use of a colour double-page picture of an African farm scene. There is an urban environment in the background and a wild environment to the left. Grade by grade, changes appear in the picture, relating to new activities in the chapters.

In a trial school about half the year 4 group had minimal English, and came from rural areas and countries north of South Africa. The teacher could speak only English.

The children were seated in self-selected groups based on language or ease of communication. In each group one pupil was able to translate between English and the common languages of the group.

> ... **Teacher**: In the farm picture, what animals do you know? What are their names? Can you tell me something about them?
>
> (Group translators repeat question to others in their groups. Discussion in groups, in several languages, follows)
>
> **Kenosi** (indicates boy in her group): He says he sees the girl [in the picture] playing with that black insect.
>
> [In the farm picture, the black insect is a cricket]
>
> **Teacher**: What does he call the insect? And tell me what language he speaks.
>
> **Kenosi**: [He speaks] Sotho language ... it is called *itiritiri*. It jumps. It makes that noise at night.
>
> **Teacher**: We'll write the name on the board - *itiritiri*. What is the name of the insect in another language?
>
> **Delisiwe**: *Inyekevu*. When you try to find it, it is hard to find because of the way it makes noise.
>
> **Teacher**: I'll write that - *inyekevu* - next to *itiritiri*. In English we call it a cricket. I'll write the English word also next to these other two.

The lesson continued in this way, eliciting knowledge from the children about many aspects of the picture. The effect of the language policy in the class was to enable the children to risk their ideas with the class, without the barrier of inadequate English.

Building visual literacy with the materials

The farm picture mentioned above is used repeatedly.

Sample questions from the year 4 book are:

> "Q3 Find the eagle (ntsukobo-kobo, le-Lyapela, u-Kosi) in the sky. Can an eagle be bigger than a bus? [In the picture, the eagle is closer to the viewer than the bus is.]
> "Q4 Why does this eagle look bigger than the bus?"

From the year 5 book:

> "Q9 In the farm picture, which month of the year is it, do you think? Give reasons for your answer."
> [The picture includes thunderclouds, maize with cobs, and birds with young]

From the year 6 book:

> "Q2 What kind of light does Linda use, when she does her home work? Give your reasons." [Pupils must infer that there is no mains electricity supply to the house, despite powerlines not far away.]

Providing language support for teachers in multilingual classrooms

For example, in year 6 the children learn about electric circuits. Trialling showed that the English terms "open circuit" and "closed circuit" were a problem for African pupils.

Conventionally, "open circuit" means the switch is not making contact and the light is therefore switched off. However, in Xhosa and Zulu, people say *Vula igesi*, meaning "**open** the light" i.e. "switch it on". So the *Science for All* text avoids the conventional terminology in grade 6 and instead teaches the alternative English terms "make" and "break" a circuit. This seems to help the pupils and teachers.

Designing the text to teach language structures for reasoning in science

The Year 5 to 9 texts set tasks in which pupils must construct logical explanations and descriptions of events. For example, they must reconstruct sentences from jumbled segments. The segments contain logical connectives such as "If ... then ...", "... because ....", "... was the cause of ..." or "The effect of ... was ...", "The greater the ..., the less the ....".

Such language structures are important for carrying the logical arguments of science as children move on to year 7 and beyond.

Dealing with science teacher resistance to teaching language

To various degrees, increasing at higher grades, science teachers feel that teaching English should not be their responsibility, and they value language mostly as an instrument for being understood when they are giving out information. Learners'

language difficulties are, unfortunately, regarded seriously only when they fail to write coherent answers in exam scripts.

The science process skills framework in the *Science for All* materials (see Appendix) stresses the skills of interpreting science information and communicating science information; these carry the receptive and expressive aspects of language. At higher grades the materials make the point that scientists, to be effective, need the language competence to read a great deal and communicate with other scientists. This process skills approach seems to give teachers confidence that language competence is a part of good science education.

The match between the intended innovation and the response of teachers

We should say something about the impact of the *Science for All* materials in schools which use them.

The experience of a number of curriculum projects, including some in England (e.g. Shipman 1972), is that three years' support is the norm to secure fairly permanent change in teachers' practice, that is to say, change which is based on teachers' understanding of the underlying rationale of the materials. It often seems that the teacher needs to use the materials quite faithfully, as designed, **before** she or he comes to appreciate the reasons why they are designed like that.

Since the *Science for All* materials are commercially published, (and their uptake has been considerable) the number of schools far outstrips the project's capacity to train teachers in their use. Furthermore, while the materials were trialled during development, they have not been evaluated since publication and distributions and use.

We know from trialling data that teachers who use the materials will re-interpret them in a way that fits with their existing practices. Initially, teachers try to use the materials like conventional textbooks. One teacher said, "The grade 5 book is very nice but it is

too small. By the middle of the year, we have finished it." This teacher uses the book in the traditional way, as a source of factual information. Then it is indeed likely that the book is "too small." If the children did the activities as intended, and if the discussions and language work happened as intended, they would probably not have enough time in the year to complete the book. Another teacher (grade 8) said of activities which were meant to explore the content and promote investigation, "The questions [in the activities] are good; I use them to quiz the kids after I have taught the topic."

However, we do have some evidence from a previous curriculum project, (a predecessor to *Science for All*) that as teachers used curriculum materials like these over several years, they began to absorb the new style of questions, and make them part of their repertoire. The three-year growth pattern predicted that the teachers would begin to integrate their new use of questions into a wider framework of learning and process skills. Something similar may happen to *Science for All* users over time – that they recognise the intrinsic value of language competence for concept development – and for the sophisticated outcomes in the new OBE curriculum (called *Curriculum 2005* and more recently *The Revised National Curriculum Statement*) (National Department of Education 2003).

While the *Science for All* project is unable to provide sustained support for its users, it is possible that as they use the materials repeatedly, certain kinds of questions will become familiar (for example, asking children to make inferences from what they see in a picture). The desirable development is that children begin to use language that describes relationships between things and concepts, as opposed to language for simply naming things or reciting "facts".

A factor in favour of empowering language in science teaching is that process skills, including some that emphasise receptive and expressive language, have been taken into the South African Revised National Curriculum Statement for Natural Sciences (Department of Education 2002), at present being phased into schools up to year 9. The **process skills** (see Appendix) which appear in policy document resemble the project

skills. The **Assessment Standards** for Natural Sciences include this one: "**Learners interpret information** [that the teacher provides]" This Assessment Standard advances in level. In year 6 for example, "**Learner interprets information by using alternative forms of the same information**" and in year 7: "**Learner interprets information by identifying key ideas in text, finding patterns in recorded data, and making inferences from information in various forms such as text, pictures and diagrams**."

This new aspect of government education policy reinforces the *Science for All* approach and may have the effect of focussing schools' attention on the value of language competence in the learning of science.

Differences and similarities between bilingual education in Africa and CLIL in education: some final comments

Since this paper on African bilingual education was given at a CLIL Conference, it is probably appropriate to end with a short statement between the similarities and differences between the two: bilingual education and CLIL[2].

Bilingual education in Africa has a very long history – since the beginning of colonialism, in fact, with developments in the post-colonial phase, with recent reorientations as described in the ADEA/GTZ/Commonwealth Secretariat/UIE (2005) document. CLIL on the other hand is a relatively new European phenomenon (*c. 2002-*). As The Guardian Macmillan ELT event for IATELF 2005 (in The OnestopMagazine) outline puts it:

> Content and Language Integrated Learning (Clil) is a rapidly developing phenomenon in global education. It raises important issues of ethics, it challenges the role of EL teachers and there is a concern that the implementation of Clil in education systems is outpacing a measured debate about the appropriateness of using an L2 as the medium of instruction. (webpage)

This quote indicates that there is an awareness that these shiny new ideas have not yet been sufficiently interrogated. They have been carried along by the energy and enthusiasm of David Marsh, the principal exponent, partly on behalf of the EU. Enormous resources are therefore available; for example for the development of

materials – online materials which may be downloaded free. Bilingual education in Africa, is still at the hardcopy, publisher-controlled stage. (This does not mean however, that children do not use materials from the Internet as resources in general.)

There is a great deal of research been conducted on bilingual education in Africa (cf The ADEA/GTZ/Commonwealth Secretariat/UIE Report 2005), and while research on CLIL has been claimed, it is actually difficult to source. Nevertheless, claims are made (CLIP 2005) that if used properly CLIL will increase both motivation and progress on the part of the pupils.

Looking at the practical implications of introducing CLIL into the school curriculum, (CLIP 2005) there is an acknowledgement that the planning process is vital: "it is likely that, especially to begin with, lessons need to be challenging cognitively, with comparatively light linguistic demands." Given what we know from Cummins' work, we wonder whether this is in fact possible: if it is cognitively demanding, it requires a critical mass of language to carry these ideas.

Furthermore, "schools need to develop materials to suit the needs of their learners", and this points to a significant difference between expectations of European versus African schools. The *Science for All* materials were developed by an expert based on extensive research and with the benefits of extensive trialing. We would not expect a teacher to be able to be a curriculum developer, and recent experience with our South African outcome-based curriculum has shown that this is absolutely impractical, for reasons of expertise and available resources.

As long-time workers in African bilingual education, we look forward to well-documented research about the viability of what we perceive to be as yet perhaps rather too loosely formulated aims in CLIL. However, we are happy to learn from success stories where they are perceived to have application to our context. We are looking forward to what the ELT Conference referred to as a "measured debate".

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[1]The Threshold Project conducted over two dozen experimental and observational studies, which may be seen in perusal of the reports, but which considerations of space preclude from detailed description in this short paper.

[2]The comparison is put together from a select bibliography of CLIL sourced from the Internet.

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Appendix

Process Skills emphasised in the project materials

The list that follows appears in the National Curriculum Statement. Here we emphasise the process skills of interpreting and communicating science information because they relate, respectively, to the receptive and expressive language competences

5 INTERPRETING INFORMATION   which might be in prose text, diagrams, diary form, table form, graph form, model or analogy:

- cross-referencing information in books, finding information from knowing how a book is structured, knowing how to learn from the printed page

- organising information using summaries or concept maps; changing the form of the information to another form

- looking for patterns in recorded information; interpolating for missing data

- making inferences from given information (similar to hypothesizing); perceiving and constructing a statement to describe a relationship between two variables

11 COMMUNICATING SCIENCE INFORMATION in forms such as

- oral reports in English or other languages, art forms such as poetry, drama; models which are enacted (e.g. using people to show the motion of the planets around the Sun)

- graphic forms such posters, diagrams, pie-charts, concept maps; word-webs;

- constructed tables, graphs (bar-graph, line graph) and physical models.

Other science process skills in the *Science for All* list are

Observing and comparing, Measuring, Recording information, Sorting and classifying, Predicting what will happen if something is changed in a situation, Hypothesizing, Raising questions about a situation, Planning science investigations (i.e. planning a fair test of an idea) and Doing an investigation (Carrying out the plan)

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Development of boys' and girls' literacy skills and learning attitudes in CLIL education

Abstract

The study investigated the possible negative effects of bilingual teaching on the development of children's literacy skills. In the bilingual classes (Finnish / English) examined, 20 per cent of the instruction was given in English. At the beginning of first grade, the level of school readiness was significantly higher in the CLIL classes than in the monolingual classes. After two study years, the pupils' literacy skills were significantly better in the CLIL classes than in the monolingual classes. When observing the pupils who started school with either a poor or an excellent level of school readiness, there was no significant difference in the literacy skills between the bilingual and the monolingual groups. After four study years, there was no significant difference in the attitudes towards reading and writing in the bilingual and the monolingual classes but the pupils in the CLIL classes showed significantly more positive attitudes towards the studying of a foreign language than their peers in the other classes. In addition, there was a significant difference in the attitudes of the boys and the girls in the monolingual classes towards reading, writing, and language learning, whereas this was not the case in the CLIL classes.

Key words: CLIL, literacy, learning attitudes

Many educators and parents are concerned that teaching through a foreign language may have negative effects on the development of children's first language literacy skills. A good command of the mother tongue is considered the basis of all learning. A considerable amount of work in school involves reading and activities closely related to reading. Therefore a struggling reader is in a difficult situation compared to fluent readers. Reading skills, including being capable of discovering the meaning and of finding information in written texts, and learning to remember this information and to relate it to previous knowledge, are the necessary tools for the study of almost any subject of instruction. (Hannon 1997; Whitehead 1999: 49.)

In the Finnish National Curriculum there is a description of a pupil's good literacy skills after two study years:

• His or her literacy skills are developed well enough to enable him or her to read texts appropriate for his or her age group.

• He or she has started to pay attention to his or her understanding of a text; and he or she is able to draw conclusions from a text.

• He or she is able to write texts needed in everyday context and also to use his or her imagination in writing.

• He or she seldom makes mistakes when writing simple, familiar words; and he or she has started to use capital letters, commas etc. in sentences. (Perusopetuksen opetussuunnitelman perusteet 2004)

In CLIL the content of all teaching has to be concise in order to leave sufficiently time for teaching through a foreign language. The risk that this involves is that the children may not have enough time to practise their literacy skills. In today's society it is important that children achieve a good, versatile command of both their first language and foreign languages. Therefore, it is a matter of great urgency to find out whether CLIL can effect the development of children's literacy skills in a negative manner.

Another matter that has caused concern amongst educators is the literacy skills of boys. In PISA (the OECD Programme for International Student Assessment) girls achieved better scores than boys in reading literacy in all OECD countries. Although Finnish children and teenagers showed significantly higher mean achievement than their peers in any other country, in Finland the gender gap was the widest. (Linnakylä, Välijärvi & Brunell 2003.) The aim of the first study described in this article was to find out whether pupils' reading and writing skills develop equally well in bilingual as in monolingual education. Moreover, the study aimed to explore if there was a difference in the development of boys' and girls' literacy skills in bilingual and monolingual classes.

Furthermore, pupils' attitudes have an important role in learning; negative attitudes towards studying can reduce learners' motivation and harm learning, whereas positive attitudes can do the opposite. Pupils whose attitudes are negative may be prevented from engaging with the intellectual challenges of learning and make poor progress.

(Oxford 2001: 168.) Thus, it was worthwhile to investigate whether there was a difference between the pupils' attitudes, and in particular, in boys' and girls' attitudes, towards reading, writing, and language learning in bilingual and in monolingual classes. This was the focus of the second study described in this article.

The first study

The study was conducted to explore whether studying in bilingual classes affects the development of pupils' literacy skills negatively or whether these pupils achieve the same level of literacy as their peers who study exclusively in Finnish. The second goal was to investigate whether bilingual education can hinder some pupils' learning. Therefore special attention was paid on the development of boys' and girls' literacy skills and on the development of the literacy skills of those pupils who started school with either a poor or an excellent level of school readiness.

The experimental group (N=78) consisted of three CLIL classes in three different schools in Southern Finland. In these classes approximately 20 per cent of all teaching was in English. The control group (N=58) consisted of three classes, of the same schools. These classes studied exclusively in Finnish. The development of all these pupils was observed from the beginning of first grade (when the children were six or seven years old) to the end of second grade. In the spring of the second study year, two new CLIL classes (N=54) were included in the study. They had started first grade in the same schools at the beginning of that study year.

The study included three measurements at intervals of one year. The purpose of the initial measurement was to define each participant's individual starting level. The second and the third measurement aimed to evaluate the pupils' literacy skills at the end of first and second grade. The results of the second and the third measurement were compared with those of the initial measurement. In the third measurement also the literacy skills of the new bilingual first grade classes were measured and the test results were compared with those of the measurement performed one year earlier.

Five tests were used as indicators. The initial test (Poussu-Olli & Merisuo-Storm 1999) measured the pupils' school readiness, including their auditory and visual perception, mathematical skills, and memory. The two reading tests (Merisuo-Storm & Poussu-Olli 2000) measured the accuracy and speed of reading both aloud and soundlessly, and reading comprehension. The writing tests (Poussu-Olli & Saarni 1998; Merisuo-Storm, 2002) included, apart from writing from dictation tasks, items that measured the pupils' ability to perceive phoneme-grapheme correspondence and their auditory and visual perception skills, listening comprehension skills, and memory.

The number of children who had been willing to study in the CLIL classes involved in this study had been large. Consequently, in all the three schools it had been necessary to choose pupils with a test. Therefore, it was not surprising that in the initial test of this study the pupils in the CLIL classes performed more successfully than the pupils in the monolingual classes. Both the aggregated scores and the scores in each five sections of the test were considerably higher in the CLIL classes. However, it should be pointed out that although the pupils studying in the CLIL classes showed, as a group, a higher starting level in regard to many of the skills and abilities that the tests measured, there were pupils also in the other classes who achieved excellent results in the initial test. There was no significant difference in the boys' and the girls' initial test results in either of the two groups.

One goal of the study was to explore how, on the one hand, the pupils with a poor starting level and, on the other hand, the pupils with an excellent starting level developed in the CLIL classes and in the monolingual classes. For that purpose the pupils were rank-ordered according to their aggregated scores in the initial test and divided into quartiles of approximately the same number of pupils.

As the results of the first grade reading test show, the difference between the general level of performance of the subject group and that of the control group did not diminish during the first study year; on the contrary, at the end of first grade the pupils studying in the CLIL classes could read with significantly greater speed and accuracy than the control group. These results were not exceptional: the pupils studying in the bilingual

first grade classes in the following year achieved approximately the same level of reading speed and reading accuracy as the previous group. At the end of second grade the difference between the experimental group and the control group had further increased. The performance of the test group was significantly better in particular in the reading comprehension test (t=4.97, p=.000.) Furthermore, the pupils in the CLIL classes made significantly less mistakes when reading (t=-2.92, p=.004) than the pupils in the other classes and their marks in reading speed were significantly better (t=-2.82, p=.006).

Table 1 shows that about 75 % of the pupils in CLIL classes, but only 31 % in other classes had achieved very good or excellent reading comprehension skills. In other classes 37 % of the pupils' marks were poor or fair. In two years the pupils in CLIL classes had achieved skills that are described as good comprehension reading skills in the Finnish National Curriculum (Perusopetuksen opetussuunnitelman perusteet 2004). They were capable of discovering the meaning and of finding information in written texts.

Table 1. The percentage distribution of the pupils' marks of the reading comprehension in CLIL and monolingual classes in the second grade (E=excellent, VG=very good, G=good, F=fair, P=poor).

	READING COMPREHENSION	
	CLIL classes N=71	other classes N=52
marks	%	%
E	33.8	1.9
VG	40.9	28.9
G	23.9	32.7
F	1.4	21.1
P	0	15.4
	100	100

The writing tests measured the development of pupils' spelling skills. In first grade there was no great difference between the test group and the control group in regard to the number of errors in the writing from dictation test, but at the end of second grade the

pupils in the test group made significantly fewer spelling errors (t=-4.71, p=.000. Table 2).

Table 2. The percentage distribution of the pupils' marks of the writing from dictation in CLIL and monolingual classes in the second grade (10=no mistakes ...4=plenty of mistakes).

WRITING FROM DICTATION		
	CLIL classes N=71	other classes N=52
marks	%	%
10	23.6	5.6
9	12.5	9.4
8	34.8	22.6
7	19.4	18.9
6	5.5	18.9
5	4.2	17.1
4	0	7.5
	100	100

Moreover, the writing tests included tasks that measured e.g. the pupils' auditory perception and memory. The initial test contained tasks that corresponded to these and in which the pupils of the CLIL classes succeeded considerably better than the control group. In the course of first grade the difference had somewhat diminished. However, after the second study year the difference between the two groups' performance had increased and the scores of the pupils in the CLIL classes were significantly better (Table 3).

Table 3. The percentage distribution of the pupils' marks of the auditory perception section of the writing test in CLIL and monolingual classes in the second grade (E=excellent, VG=very good, G=good, F=fair, P=poor).

AUDITORY PERCEPTION		
	CLIL classes N=71	other classes N=52
marks	%	%
E	37.5	5.9
VG	30.6	37.2
G	25.0	39.2
F	6.9	7.9
P	0	9.8
	100	100

This was probably due to the fact that studying through a foreign language asks for more attentiveness; consequently, the pupils learn to listen with attention. Furthermore, when compelled to try to learn to distinguish sounds, intonation and stress in a foreign language these pupils had developed their auditory skills. Memorising foreign words had developed their memory (Table 4).

Table 4. The percentage distribution of the pupils' marks of the memory section of the writing test in CLIL and monolingual classes in the second grade (E=excellent, VG=very good, G=good, F=fair, P=poor).

MEMORY		
	CLIL classes N=71	other classes N=52
marks	%	%
E	33.3	0
VG	37.6	33.3
G	25.0	54.8
F	4.1	9.9
P	0	2
	100	100

As stated above, all the participants were divided into four quartiles according to their aggregated scores in the initial test. Of the pupils who fell into the lowest quartile, those who studied in the CLIL classes achieved, at the end of second grade, better scores in the reading accuracy, reading speed, and reading comprehension tests than those who studied in the monolingual classes. In the CLIL classes their skills had developed so well that half of them achieved excellent scores in one of the afore mentioned tests and in the other tests at least good scores. In the writing from dictation test pupils who studied in the CLIL classes showed the same or a higher level of performance than pupils of the control group. The performance of pupils whose starting level was excellent did not differ greatly at the end of second grade regardless of whether they studied in a bilingual or monolingual class.

As stated above, there was no significant difference in the boys' and the girls' results of the initial test in either of the two groups, but in the second grade writing from dictation test there was a significant difference in the boys' and the girls' marks in the CLIL classes as well as in the other classes. Nevertheless, when the test results achieved by the boys and the girls studying in the CLIL classes are compared with those of the other classes there is a considerable difference. Both the boys and the girls read and wrote significantly better in the CLIL classes than in the monolingual classes.

The second study

The second study was carried out two years after the first study. The focus was to find out if there was a difference between pupils' attitudes towards reading, writing and second language learning in bilingual and in monolingual classes. In the study participated 145 fourth-grade pupils (aged 10 to 11). The experimental group (N=70) consisted of three CLIL classes in three schools in South Western Finland. The pupils had studied English from the beginning of the first study year. The control group (N=75) likewise consisted of three classes, of the same schools. These pupils had been taught English for nearly two years using a traditional language teaching method. Most of the participants in the study (60 per cent) had taken part in the study described above.

The instrument was derived from two measures: Elementary Reading Attitude Survey, developed by McKenna & Kear (1999) and Writing Attitude Survey, developed by Kear, Coffman, McKenna and Ambrosio (2000). In the measure used in this study the questions were, however, mainly different and it was designed to measure pupils' attitudes towards reading, writing and language learning. The instrument contained three sections of twelve items. When answering a question the pupil ticked the one of the four teddy bears placed above the question that best illustrated his or her opinion about the asked matter. The very happy teddy bear meant that the pupil loved to do what he or she was asked about, the smiling teddy bear meant that he or she did it with pleasure, the tired and unhappy teddy bear meant he or she did not want to do it, and the repulsed teddy bear meant that he or she hated to do it. The instrument achieved a high degree of reliability; Cronbach's alpha, a measure of internal consistency, was .84.

There was no significant difference in the attitudes towards reading and writing in the CLIL and the monolingual classes, whereas the girls' and the boys' opinions differed greatly especially in the monolingual classes. The boys' attitudes towards reading and writing were more negative than the girls' attitudes. However, in the CLIL classes the boys' and the girls' opinions did not differ significantly in any of the items in the reading section of the test. In contrast, in the other classes the boys' and the girls' attitudes towards, for example, reading books and reading aloud in class differed significantly. In the writing section of the questionnaire, writing poems was the only task towards which the boys in the CLIL classes had significantly more negative attitudes than the girls in the same classes. However, in the other classes boys gave, in addition, significantly more negative answers to the questions about being an author in the future, about writing to a pen friend, about keeping a diary, and about editing their texts.

Pupils' answers to the questions about studying foreign languages differed significantly in the CLIL classes and in the monolingual classes. The pupils in the bilingual classes had more positive attitudes towards studying the English language than their peers in the other classes. It is worth mentioning that there was a significant difference between the boys' and girls' aggregated scores in the monolingual classes whereas this was not the case in the bilingual classes.

Most pupils considered a good command of English important. There were only four pupils who found studying English very unpleasant, all of them in the monolingual classes. All the pupils in the CLIL classes chose one of the two most positive alternatives; almost 70 per cent of them ticked the happiest teddy bear and the rest the smiling teddy bear, whereas only 27 per cent of the pupils in the monolingual classes chose the most positive reply. The difference between the two groups was significant (t=5.71. p=.000, Table 5). Moreover, the pupils' attitudes towards speaking and conversing in English were significantly more positive in the CLIL classes than in the monolingual classes. It was more natural for them to use the English language because ever since they started school they had been encouraged to speak it and had used it in an everyday context. Their peers in the monolingual classes felt less comfortable speaking it because they had used it only in language classes.

Table 5. The percentage distribution of the pupils' opinions about studying English in CLIL and monolingual classes in the fourth grade (4= I love doing it, 3= I like doing it, 2= I do not like doing it, 1= I hate doing it).

	OPINIONS ABOUT STUDYING ENGLISH	
	CLIL classes N=70	other classes N=72
marks	%	%
4	69	26
3	31	62
2	0	6
1	0	6
	100	100

Nowadays many children have travelled abroad. Some of the pupils had pleasant experiences about being able to use the English language, for instance, in a shop. Most of the pupils felt that it would be nice to use English in practice, and opportunities to do so had increased their motivation to study more. In the bilingual classes 94 per cent of the pupils and in the other classes 90 per cent of the pupils ticked one of the two happiest teddy bears when they were asked if they would like to buy something abroad using English. This was the question to which the pupils in the monolingual classes gave the

most positive answers, but in the CLIL classes the pupils gave to several other questions even more positive answers.

Another way to use a foreign language in practice is writing letters to a foreign pen friend. The children in the CLIL classes had more confidence in their writing skills and consequently they had significantly more positive attitudes towards letter writing in English than the pupils in the other classes. The pupils were asked about letter writing also in the writing (in Finnish) section of the questionnaire and the attitudes of the boys were significantly more negative than the girls' attitudes. In the monolingual classes the difference between the attitudes of the two genders towards writing to a pen friend in English was significant as well but this was not the case in the bilingual classes. The boys in the CLIL classes were almost as eager to have a foreign pen friend as the girls.

Four of the questions were only asked in the bilingual classes because the pupils in the other classes had little, if any, experience of the activities in question. In the CLIL classes most of the pupils had positive attitudes towards reading and writing in English. However, the attitudes were not as positive as towards speaking and conversing in English. In the English section of the questionnaire there was only one question to which the girls and the boys in the CLIL classes gave answers that differed significantly: the girls enjoyed reading texts written in English much more than the boys. However, in the CLIL classes the boys' and the girls' attitudes towards reading in Finnish did not differ significantly, whereas in the other classes the difference between the attitudes of the two genders was significant. Studying contents of different subjects in English is demanding but 30 per cent of the pupils in CLIL classes stated that they loved it and 44 per cent of them said they liked to do it. Only three per cent of them found it very unpleasant and there was not a great difference between the boys' and the girls' opinions.

Conclusion

The results of the first study showed that, even when the different starting levels of the two groups were taken into account, the pupils' literacy skills developed at least equally

well in bilingual education as when the pupils studied exclusively in Finnish. Furthermore, studying through one language or two languages did not appear to have any significant effect on the development of a pupil's literacy skills when his or her starting level at the beginning of first grade had been poor or excellent. The pupils of the CLIL classes were especially advanced in reading comprehension skills; thus they were well prepared for successful studies later on. The results of the study support the view that when most of the teaching is carried out in the pupils' first language, CLIL does not affect the development of first language literacy skills negatively. Children are capable of maintaining the two languages separate. Moreover, they achieve an awareness of their mother tongue as a language and a communication system comparable to other languages.

The results of the second study revealed that in the CLIL classes the pupils' attitudes towards language learning were more positive than the attitudes of their peers in the monolingual classes. Although the boys, at the age of ten, did not appear to be as interested in reading and writing as the girls, the difference between the attitudes of the two genders was not as apparent in the CLIL classes as in the other classes. Moreover, in the monolingual classes there was a significant difference between the boys' and the girls' attitudes towards language learning, whereas this was not the case in the CLIL classes.

After having used the English language in an everyday context for four years the pupils in the CLIL classes found speaking and writing in English and hearing and reading it natural. Moreover, they did not feel uncomfortable studying through it. Consequently their attitudes towards foreign language learning were more positive than the pupils' attitudes in the other classes. The results of the second study show that especially boys benefit of bilingual education. In CLIL classes boys' attitudes towards reading, writing and language learning were more positive than the attitudes of the boys in the other classes.

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Content and language integrated approaches: What lies ahead?

In the European context there is increasing interest in bi- and multilingual issues in different institutions at both the national and supranational levels. Consequently, the integration of language and content (dual-focussed education) is seen as a possible way to deal with the increasing demands to get both sufficient and efficient language and subject teaching within the compulsory education period of many European citizens. This interest was recently manifested in the first report on multilingualism adopted by the European Commission in November 2005. In the report entitled *A new framework strategy for multilingualism* (2005) content and language integrated learning (defined as 'learning a subject through the medium of a foreign language') is listed as one of the key areas for action in education systems and practices.

Among both theoreticians and practitioners in the field the integration of content and language is by no means a new phenomenon and results indicate that it *can* and *does* work. All the same, there are several questions to answer if content and language integrated learning is to become a regular, effective education approach or programme not only for a chosen few, but for students of all ages and capacities.

We simply have to accept that new, multifaceted education approaches implemented as integration of content and language will require much co-operation to develop optimally throughout the world. This process is strengthened by the active interest shown both during conferences, such as the one these proceedings are based on, and the rapidly growing research body within the field. Furthermore, the practices put forward in the establishment of integration of language and context in educational settings do not only lead to discussions of language pedagogy, but touch upon both language policy and

language theory as well. Hopefully, the various dimensions embodied in the integration of content and language do not confuse the implementations, but rather create growing awareness of different aspects of the discipline which may benefit not only bilingual education, but also language acquisition, language teaching and cognitively related issues in general.

Since content and language integrated approaches offer a multitude of research questions to investigate, I find it hazardous to list priority areas of development. I will, however, reflect on some dimensions which I personally think are important to take into account when further exploring this research area.

Finetuning definitions and principles

A detailed description of the characteristics of the implemented content and language integrated approach naturally serves as an important inventory and a useful tool in establishing and developing a programme. In addition, it can also serve the purpose of identifying crucial elements of the programme structure in order to include it in its proper context. Even though every approach/programme can in a way be labelled unique, this tendency must not be over-emphazised to the extent that we will end up with a range of different labels for almost identical approaches/programmes. Under the umbrella term 'content and language integrated approaches' we find a variation of different names in different contexts (see e.g. Met 1998; Brinton, Snow & Wesche 2003; Ellis 2003). In order to enhance the identification process Met (1998) and Brinton, Snow & Wesche (2003) have placed different programmes or alternatives on a continuum where the ranking depends on the most distinctive feature of the approache, i.e. whether the focus of the approach is language-oriented or content-oriented.

Programmes such as early total immersion are placed at one extreme of the continuum since these programmes emphasize that students are to master content to the same extent as other students of the same age who receive all instruction in their first language. At the other extreme of the continuum the focus is oriented more towards language learning, and in order to facilitate and maximize the language learning process

elements of subject teaching are conducted through a second or a foreign language. As this way of teaching a language may also be typical for a traditional language class, the solution is usually to look at the curriculum guidelines on time limits; in the content and language integrated approach the language learning process does not take place during time devoted to language instruction, but during regular content teaching.

In addition to the language vs. content-oriented continuum there are also other important elements to define within different approaches. Even if the focus may be more or less language-oriented, the ultimate goal is to find ways which lead to better language competence among students. Since language competence may be defined in different ways, it is essential that the means to reach the expected language outcomes are adequate. Even the ultimate goal itself may be worth reconsidering. As an example, the concept 'functional competence' which researchers often refer to when asked about what kind of competence immersion students are supposed to get in their L2, cannot include the same kind of elements in all phases of the programme. When asking practitioners in the field, I am usually offered definitions which vary a great deal in substance. Consequently, functional competence must be seen in relation to such quantitative and qualitative factors as exposure time, language learning opportunities, language chosen as the medium of instruction in different subjects/thematic fields, age of the student etc. It is quite obvious that the expected language outcomes cannot be reached if functional competence after several years in immersion is still defined to be at "survival" level (e.g. ordering a cup of coffee), when there have been numerous opportunities for students to make use of their immersion language in cognitively demanding tasks during each school day. Therefore, the practitioners involved must negotiate, identify and adapt traits of e.g. functional competence to different ages and phases of the programme. This is important to ensure a continuous language learning process for each student, but also to help parents, students and administrators make well informed choices about the structure and the expected outcome of the different approaches.

In general, the need for identifying substance within principles becomes apparent in applying general theoretical assumptions and central principles at the practical level (Figure 1).

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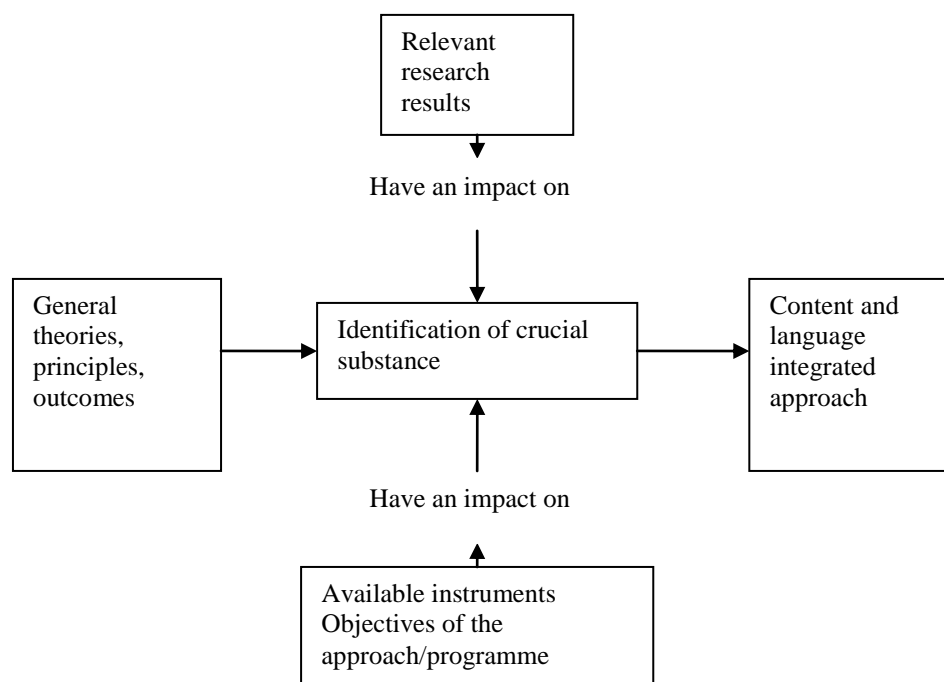
Figure 1. The process of identifying crucial substance in the establishment of a content and language integrated approach.

Research results show that in content and language integrated approaches there has to be an awareness of the fact that students are engaged in a simultaneous process of learning both content and language. The ways to deal with this fact are presented today in various principles of language pedagogy. The choice of adopting some principles and rejecting others cannot only be built upon personal experiences and intuition, but must be scientifically justified and adapted to the available instruments and objectives of the approach/programme. The built-in generalization within each principle also calls for a thorough discussion among practitioners about crucial practices and routines of the substance of every principle. When there is an agreement on the substance of each principle, the language pedagogy principles will help unify the experiment instead of fostering individual adaptations among the teacher team. In the worst cases individual adaptations can get so marked that the approach itself is not noted as the most decisive criterium for selection by parents and students, and consequently the choices made by parents and students will be teacher-based rather than approach-based.

Local and global perspectives

In many educational settings a content and language integrated approach has been started by an enthusiastic teacher team, or even by individual teachers who have an inner motivation to pursue this approach. In many cases practitioners have themselves taken on to function as both teachers and researchers to be able to follow up the progress of the approach. This dual function is of course extremely hard to manage all alone. Before launching the experiment it is worth investigating what opportunities there are to involve other colleagues, teachers, administrators or researchers in order to establish a programme which is not dependent on only one teacher and his/her enthusiasm for its existence. It is equally important that the interest in implementing the content and language integrated approach continues and that the first experimental phases are backed up with scientific documentation which, if necessary, will help to revise and refine the experiment and place it in line with the expected outcomes. At the same time thorough scientific documentation stands as a guarantee for not letting different approaches become isolated phenomena and will help others in a similar situation get a better start as well as prevent them from reinventing the wheel all over again.

During the last years I have come across numerous studies that have documented content and language integrated approaches. Most of them are case studies and they serve as excellent documents of program implementation including the assessment perspective. On the other hand, the lack of a long term perspective is prevalent. This can of course be explained with the fact that most investigated approaches have been set up fairly recently (Figure 2). Even so, I think it is important not to forget that establishing a regular programme requires more than first or second year reports. Classroom research has consistently shown that new principles and effective language pedagogy practices take time to fully develop and to become an integral and natural part of classroom work.
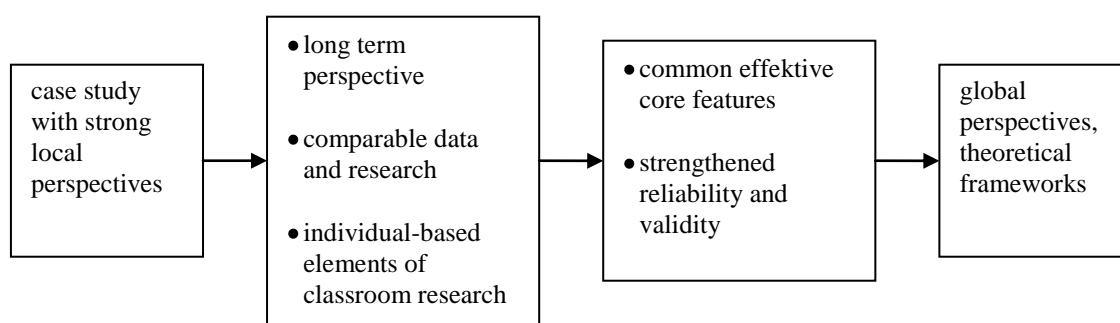
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Figure 2. Advancing from local to global perspectives in content and language integrated research.

In addition to the lack of a long term perspective, I often find case studies lacking in comparable data and research. When setting up a new approach or a programme, available resources define the framework in which the experiment starts, and these resources in the real world are very unlikely to be sufficient to provide the optimal framework right from the start. Therefore, the experiment begins with slight revisions and thus brings a local perspective to the experiment. This is natural, but often the local perspective continues to dominate the documentation and may even become a burden for the development of the experiment.

If the quality dimensions of content and language integrated approaches are to be improved, the search for common, effective core features must be more intensive than the ambitions for local uniqueness. At the same time, reference points usually give a scientific quality to the documentation of an approach or a programme and strengthen the reliability and the validity of the assessment procedures. Therefore, I hope that the next step will be to broaden the follow up of content and language integrated approaches to include not only assessment of different factors within the experiment, but also to compare crucial factors of the experiment in a more global perspective. This aspect becomes even more important in the light of the fact that the economic and the personnel resources seldom allow a multidimensional scientific assessment instrument to be used at every local or regional level.

In addition, especially classroom related research – where individuals are a central part of the assessment procedure – involves so many interdependent research components that we need to be aware of what kind of results have been presented in comparable studies elsewhere. Due to the human-related components of the research field, results of other studies can be both unexpected and contradictory. Via scientific selections of comparable data, it will automatically become possible to orient towards more global perspectives. If the research field develops in this way, I think that there are real possibilities for it to challenge existing global assumptions about general theoretical frameworks for language acquisition, language learning and language teaching.

Cutting across disciplines

Currently there are implementations of content and language integrated approaches from very early language learning (primary or preprimary level) to advanced adult aducation (university level). It seems to me that students who are between these end points are somewhat neglected. As we now have language students, who have been acquinted with new languages from very early in their education and are now experiencing language learning through subject teaching in a second or a foreign language, we have excellent opportunities to follow the development of these students. At the same time, we will get new and valuable research results which will help us follow aspects of longitudinal development among individuals.

From a language acquisition perspective the existing focus on the end points of the age level continuum tends to naturally lead to different research issues in accordance with the age level of the students.

An argument in favour of early language learning is to stress that learning a second language is more natural for young children as their cognitive ability level is still under development and they do not require very elaborate linguistic means to express themselves. In other words, young language learners will not feel the same degree of frustration as teenagers or adults do when their second or foreign language mastery is not in balance with the contents of the message they would wish to convey. This

argument is indirectly based on the assumption that the learner's acquisition process is a sequential/successive bilingual process where 1) the acquisition of a second language does not start until a first language has been established and 2) that the linguistic repertoire of the learner contains a well developed first language in which the learner will have no trouble in expressing the nuances of the content message. In accordance with these arguments the evaluation of the academic outcome in immersion contexts has to a large extent been conducted in the first language of immersion students even though the subject teaching has been given through a second language.

This kind of evaluation process can thus be interpreted as a way of giving students or learners the right to choose in what language they consider themselves to have the most appropriate and accurate means to express the content of different subjects. However, this view gives language per se a rather reflective role, i.e. language merely expresses the cognitive ability. There are also other standpoints, and these give language a more active role in the process of cognitive development. It is likely that content and language integrated approaches for young language learners can provide valuable contributions in this area of research. Above all, the link between cognition and language is evident in content and language integrated approaches. Furthermore, in content and language integrated approaches the presence of a second language as a medium of instruction is strictly defined as part of the classroom settings where young learners are confronted with cognitively demanding content matter. I hope that future studies in content and language integrated approaches (see e.g. Laurén in press) can play a significant role in involving more cognitive-oriented research (Figure 3). As Bowerman & Levinson (2001) state, cognition and language seem to have oriented in opposite directions. The cognitive development seems to indicate convergence (infants seem to attain the same cognitive level in early childhood), whereas language development seems to indicate divergence (from very early age many children master several languages with different structures). As these seemingly contradictory standpoints cover a multitude of studies with contradictory results and different orientations, there is certainly need for more research.
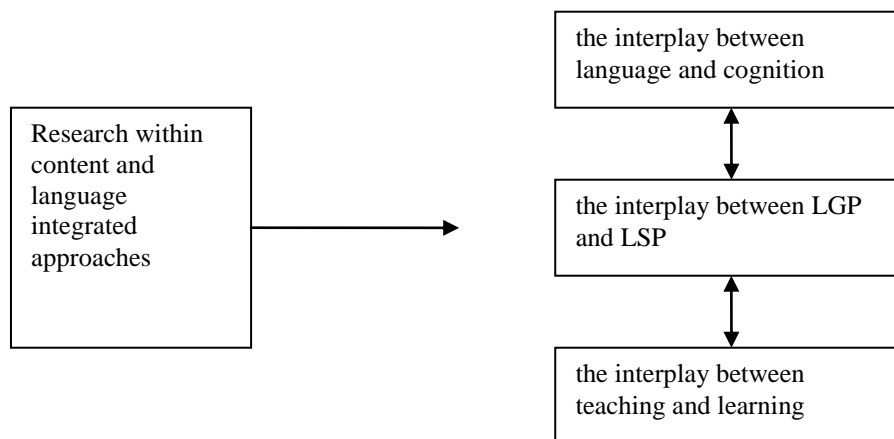
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Figure 3. Cross-disciplinary aspects of research interests in content and language integrated research.

While cognition and language often appear to be linked together in studies of young language learners, language studies involving adult learners in content and language integrated approaches often include elements of language for special purpose (LSP). Since the target groups are mostly vocationally oriented language learners and advanced language learners at university-like levels, the aim is not only to learn a new language in general, but to master content areas in one's own field of profession in the other language as well as in the first language. This fact requires a thorough mastery of the linguistic means to express concepts, ideas and procedures of each content field, which together with the language learning process create multifaceted learning processes we have just begun to explore.

In this research area we are firstly faced with problems of definitions (see e.g. de Beaugrande 1989; Nordman 1992). Even when talking about special technolects (e.g. legal English, scientific English etc.), the technolect itself does not exclusively contain elements of LSP. Nor does a technolect consist only of a specific lexicon or content-specific terminology. Furthermore, distinguishing two technolects cannot be compared to distinguishing two languages (e.g. Finnish and Swedish) since there are linguistic elements which both technolects share. A dichotomy between LSP and LGP (language for general purpose) does not appear to work either, since every technolect overlaps more of less heavily with LGP. Finally, students' first contact with more content-

specific language is seldom explicitly taught, the substance is to be "absorbed" by the students as they advance along the path of their professionalization.

As for content and language integrated approaches, the research area has to take into account the presence of elements of both LGP and LSP and the fluctuating nature of their domains for each technolect. In addition, for research to progress in this direction, it is necessary to advance from a more overtly linguistic level, where mostly content-specific lexicon are focussed upon, to more cognitively oriented levels where research questions are directed towards each technolect's way of constructing knowledge within the field and the linguistic preferences used to express these structures.

Research studies conducted in content and language integrated approaches or pro-grammes naturally bring researchers' attention to the teaching process, the learning process and the learning outcomes. Thereby, they also support the on-going process of diminishing the gap between strictly product-oriented and strictly process-oriented research. In this linking process, learning/teaching strategies especially seem to attract the attention of both linguistically and pedagogically oriented research.

On the whole, it appears that the identification of central process factors complemented by related academic and linguistic outcomes has already put forward a critical mass of applied studies in which the next step would be to integrate, (re)construct or even challenge existing theoretical frameworks in second language acquisition.

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