



An Evaluation of the Approaches to Text Modification Used by Lower Secondary CLIL Teachers in Finland

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Una evaluación de los enfoques a la modificación de textos utilizados por los profesores AICLE de secundaria inferior en Finlandia

Uma avaliação das abordagens à modificação de texto usadas por professores CLIL do ensino médio inferior na Finlândia

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ABSTRACT. This study sets two main objectives to address this research gap in CLIL materials design: to identify and to evaluate teachers' approaches to text modification. The study focuses on four secondary teachers who teach non-language subjects to grades 7–9 in Finland, in English. The qualitative data consist of interviews and teaching materials designed by the participants. A review of over 60 studies is conducted in order to provide a framework for the evaluation of input modification strategies. The studies indicate that elaboration devices seem to enhance L2 comprehension and vocabulary development. The same cannot be as confidently stated about the effect of simplification. This study identifies all three main approaches to text modification in the participants' teaching materials. Regardless of their previous teaching experience, most teachers use elaboration strategies when adjusting the linguistic and cognitive level of texts. More experienced teachers seem to avoid using simplification strategies, whilst less experienced teachers adopt a wide range of strategies. All participants use some types of rediscursification strategy. This study can provide the professionals in the field of CLIL education with an insight into the reality of how CLIL practitioners modify materials. The results may also contribute to CLIL teacher education and in-service training by informing teachers of the commonly used input modification strategies and raising awareness of the effectiveness of these techniques.

Keywords (Source: Unesco Thesaurus): Content and Language Integrated Learning; CLIL; CLIL in Finland; materials; materials adaptation; text modification; CLIL teaching materials.

RESUMEN. Este estudio establece dos objetivos principales para abordar esta brecha de investigación en el diseño de materiales AICLE: identificar y evaluar los enfoques de los profesores a la modificación de textos. El estudio se centra en cuatro profesores de secundaria que enseñan materias no relacionadas a lenguas en inglés en los grados 7-9 en Finlandia. Los datos cualitativos consisten en entrevistas y materiales didácticos diseñados por los participantes. Se realiza una revisión de más de 60 estudios con el fin de proporcionar un marco para la evaluación de las estrategias de modificación de insumos. Los estudios indican que los dispositivos de elaboración parecen mejorar la comprensión de L2 y el desarrollo del vocabulario. Lo mismo no se puede afirmar con tanta seguridad sobre el efecto de la simplificación. Este estudio identifica los tres enfoques principales a la modificación de textos en los materiales didácticos de los participantes. Independientemente de su experiencia previa como docente, la mayoría de los profesores utilizan estrategias de elaboración al ajustar el nivel lingüístico y cognitivo de los textos. Parece ser que los profesores con más experiencia evitan el uso de estrategias de simplificación, mientras que los profesores con menos experiencia adoptan una amplia gama de estrategias. Todos los participantes utilizan algún tipo de estrategia de rediscursificación. Este estudio les puede proporcionar a los profesionales en el campo de la educación AICLE una idea de la realidad de cómo los practicantes de AICLE modifican los materiales. Los resultados también pueden contribuir a la formación y a la formación en servicio de profesores AICLE al informarles sobre las estrategias de modificación de insumos más utilizadas y aumentar la conciencia sobre la eficacia de estas técnicas.

Palabras clave (Fuente: tesauro de la Unesco): Aprendizaje Integrado de Contenidos y Lenguas Extranjeras; AICLE; AICLE en Finlandia; materiales; adaptación de materiales; modificación de textos; materiales didácticos AICLE.

RESUMO. Este estudo estabelece dois objetivos principais para abordar esta lacuna de pesquisa na concepção de materiais CLIL: identificar e avaliar as abordagens dos professores à modificação de textos. O estudo se concentra em quatro professores do ensino médio que ensinam disciplinas não relacionadas às línguas em inglês nas 7-9 séries na Finlândia. Os dados qualitativos consistem em entrevistas e materiais didáticos elaborados pelos participantes. É realizada uma revisão de mais de 60 estudos a fim de fornecer uma estrutura para a avaliação das estratégias de modificação de input. Os estudos indicam que dispositivos de elaboração parecem melhorar a compreensão de L2 e o desenvolvimento do vocabulário. O mesmo não pode ser dito com tanta certeza sobre o efeito da simplificação. Este estudo identifica as três abordagens principais à modificação de textos em materiais de ensino dos participantes. Independentemente de sua experiência de ensino anterior, a maioria dos professores usa estratégias de elaboração ao ajustar o nível linguístico e cognitivo dos textos. Parece que os professores mais experientes evitam o uso de estratégias de simplificação, enquanto os professores menos experientes adotam uma ampla gama de estratégias. Todos os participantes usam algum tipo de estratégia de rediscursificação. Este estudo pode fornecer aos profissionais da área da educação CLIL uma visão da realidade de como os profissionais CLIL modificam os materiais. Os resultados também podem contribuir para a formação e a formação em serviço de professores CLIL, informando-os sobre as estratégias de modificação de input mais amplamente utilizadas e aumentando a consciência sobre a eficácia dessas técnicas.

Palavras-chave (Fonte: tesauro da Unesco): Aprendizagem Integrada de Conteúdo e Línguas Estrangeiras; CLIL; CLIL na Finlândia; materiais; adaptação de materiais; modificação de textos; materiais de ensino CLIL.

Introduction

The concept of Content and Language Integrated Learning (CLIL) has been rapidly adopted in Finland and received with positivity. Having high-quality CLIL materials is seen as one of the most essential components of a successful CLIL program. However, the challenges of producing materials for teaching in a foreign language have widely been acknowledged and have remained for at least three decades. About 90% of the CLIL practitioners expressed their preference for either producing materials from scratch or modifying materials to make them more suitable for their learners. This means CLIL teachers of all subjects adapt materials every day. Nevertheless, very few studies were found to carry out an in-depth analysis of adaptation methods in the context of CLIL teaching.

This study sets two main objectives to address this research gap: to identify and to evaluate teachers' approaches to text modification. The study focuses on four secondary teachers who teach non-language subjects to grades 7–9 in English. The qualitative data consist of interviews and teaching materials designed by the participants. A thorough review of over 60 studies is conducted in order to provide a theoretical framework for the evaluation of input modification strategies.

This study can provide the professionals in the field of CLIL education (e.g., material writers, publishers) with an insight into the reality of how CLIL practitioners modify materials. The results may also contribute to CLIL teacher education and in-service training by informing teachers of the commonly used input modification strategies and raising awareness of the effectiveness of these techniques.

Literature Review

Content and Language Integrated Learning

Dalton-Puffer (2011) defined CLIL as a dual educational approach to content and language, where curricular content is provided through a foreign language, typically to learners in some type of mainstream

education at the primary, secondary, or tertiary level. The ultimate goal of CLIL, according to Van Kampen et al. (2018), is to develop students' foreign language competence whilst facilitating their learning of subject matter simultaneously. Language and content have been deemed to be integrated in the definitions of CLIL, but there has been a variation in the level of their integration. The variation can be illustrated using Bentley's (2010) continuum of CLIL, with "soft CLIL," at one end, and "hard CLIL," at the other. Soft CLIL approach is often taken by language teachers as a method to integrate content into their lessons while hard CLIL approach is commonly adopted by content teachers. In the current study, CLIL practices were engaged by content teachers, thereby situating this study towards the "hard CLIL" end of the continuum.

To gain a clearer picture of the structure of CLIL programs, it is necessary to take a look at Dalton-Puffer's (2011) six-point list of the characteristics of CLIL programs in Europe, South America, and many parts of Asia:

1. CLIL is about using a foreign language or a Lingua Franca, not a second language.
2. The dominant CLIL language is English.
3. CLIL teachers are normally non-native speakers (NNS) of the target language.
4. CLIL lessons are usually content lessons, while the target language continues as a separate subject.
5. Less than 50% of the curriculum is taught in the target language.
6. CLIL is usually implemented once learners have already acquired literacy skills in their first language.

CLIL materials

Having high-quality CLIL materials has been seen as one of the most essential components of a successful CLIL programme (De Graaff et al., 2007; Marsh, 2002; Mehisto, 2008). Compared to students learning in their mother tongue, L2 learners tended to be more dependent on teaching materials, usually on textbooks due to their stable nature and flexibility in the case of revision (Rapatti, 2009). However, the challenge of producing materials for teaching through a foreign language has

widely been acknowledged and has remained for at least three decades. The consequence of this was reflected in Apsel's (2012) study about CLIL stream student dropouts in Germany, in which difficulties with accessing textual materials and the learning of vocabulary were reported to be among the reasons.

Morton's (2013) study identified four types of materials that were most commonly used by CLIL teachers from four European countries, including Finland: textbooks intended for native speakers (NS), CLIL textbooks, adapted authentic materials, and self-written materials.

Morton (2013) reported that over 70 percent of teacher participants rarely used textbooks written for NS, while nearly 54 percent reported low use of CLIL textbooks, and a substantial minority reported frequent use of this type of material. Both textbooks intended for NS and CLIL textbooks were concluded to cause concern in the areas of (a) appropriateness of language and content for learners; (b) appropriateness for educational and cultural context; (c) flexibility, design, and pedagogical approach; and (d) availability and convenience.

In contrast, more than 90 percent of teachers preferred preparing materials from scratch and almost 90 percent of them modified authentic materials to make them more suitable for their target learners (Morton, 2013). Plenty of studies support self-made materials in any education setting in terms of advancing learners' textual skills and providing variation for teaching methods (e.g., Bull, 2013; Aguirre-Morales et al., 2014). Self-made materials were reported to be a critical aspect of CLIL materials: CLIL teachers must make their own materials or adapt heavily, otherwise the materials will not meet the linguistic, cognitive and affective needs of their learners (Morton, 2013). Rapatti's (as cited in Bovellan, 2014) study of pupils with immigrant backgrounds studying History in Finnish showed that elaborated history texts were considerably more accessible for them, and they were able to read and discuss them enthusiastically.

Text modification

Researchers have classified adaptations in CLIL materials in different ways (Gierlinger, 2007; Borzova, 2007; Lorenzo, 2008). Lorenzo's (2008) model is based on Moore and Lorenzo's (2007) study on CLIL

teachers' adjustments of authentic texts for CLIL classroom, in which they identified three distinct approaches to adaptation: simplification, elaboration, and rediscursification.

Simplification. Simplification is considered the most basic input modification strategy, which requires the text adapter to lower the level of linguistic complexity. Research reviewed in Second Language Acquisition found simplification to be similar to natural adaptation processes such as interlanguage talk and caretaker speech (see Ellis, 1993; Gass, 2003; Gass & Selinker, 2008). Examples of the typical strategies are: reducing mean length index, i.e., number of words per sentence; text with a low type-token ratio; and restricting the range of vocabulary.

Elaboration. The aim of elaboration is to reduce the cognitive complexity without major modifications of the original linguistic texture. The guiding principle is to make meaning clear without reducing the linguistic complexity of the text. Common strategies used are paraphrasing, repetition, and apposition, which add information to help contextualize the difficult parts. Therefore, the elaborated texts tend to be longer, have more words per sentence, and have more nodes than the original (Chaudron, 1983; Yano et al., 1994).

Rediscursification. Lorenzo (2008) introduced rediscursification as the third means of adaptation. Although the process still modifies sentences and texts, rediscursification operates at a much higher level with changes arising from a discursive interpretation of the situation where the text will be read. Adaptors tend to be bolder with adjustments with the intention to reappropriate the text as a means for the social construction of a learning experience. As a result, modifications can incur the altering of the meaning and the discourse type.

Lorenzo (2008) further defined four main strategies of rediscursification: change of text typology, more overt interactional structure, explicit engagement devices, meaning adaptation, and format adaptation.

A survey of previous research on the effects of input modification

In this field of research, three recurring themes were found—that is, reading comprehension, authenticity, and vocabulary. In the following subsections, I will summarize the results of previous studies on simplification and elaboration within the context of the three recurring themes.

Rediscursification was identified only in the last decade by Moore and Lorenzo (2007), and its effects on comprehension and learning are still yet to receive the attention of empirical research. In addition to the studies conducted by Moore and Lorenzo (2007) and Lorenzo (2008), the discussion on rediscursification will be drawn from a closer reading into Bhatia's (1983) work cited by Moore and Lorenzo (2007).

Reading comprehension. The studies investigating the impact of simplification on reading comprehension were not consistent and were occasionally contradictory. By measuring ability to answer questions, retain information over time and recall important aspects of content, early research showed that simplification did not improve comprehension (Chall, 1958; Klare, 2000). Other studies even suggested that simplification at the different levels of a text (lexicon, syntax, lexicon-syntax) may actually lower the readability of the resulting text (e.g., Blau, 1982; Ellis, 1993; Young, 1999; Oh, 2001; Crossley et al., 2007).

On the other hand, about the same number of studies demonstrated that text simplification can aid L2 reading comprehension (Crossley et al., 2007; Crossley et al., 2014; Leow, 1997; Yano et al., 1994; George, 1993). The effect, however, may not be significant (Young, 1999), and the improvement seemed to only occur when the text content was unfamiliar to the student readers (Keshavarz et al., 2007).

The nature of the interplay between reading comprehension, language proficiency and simplification has also been contested. Studies revealed that language proficiency had a significant effect on both reading comprehension and recall whereas linguistic simplification showed no significant effect (Floyd & Carrell, 1987). Moreover, Crossley et al. (2014) found that simplification can benefit lower language ability learners whilst, despite using similar research methods, the results of Oh's (2001) study showed that it was the higher proficiency learners who benefit more from simplification.

In addition, researchers also warned the practitioners that simplified material should be used with caution as it may lead students to develop inappropriate reading strategies (Honeyfield, 1977; Lotherington-Woloszyn, 1993).

However, the existing evidence of the effect of simplification on reading comprehension from the perspectives of students and teachers showed more consistent and encouraging results. Ali (2017) reported

that simplification has a positive perceived effect on students' comprehension. It was also found that simplification has a beneficial impact on students' results in an exam situation (Abedi et al., 1997). Teachers have expressed their belief in enhancing comprehension and access to the curriculum by using simplified language materials (Rix, 2009).

In contrast, research findings on the correlations between elaborative input and reading comprehension were much more consistently positive (Blau, 1982; Cervantes, 1983; Kelch, 1985; Fujimoto et al., 1986; Parker & Chaudron, 1987; Brown, 1987; Tsang, 1987). Interestingly, Yano et al. (1994) concluded that, even though elaborated texts increased the general processing burden due to text length and complexity, they were, simultaneously, cognitively simpler than the unmodified texts because of the processing support provided to readers.

Oh's (2001) study showed that elaboration is at least as equally successful as simplification in improving comprehension when compared with unmodified text versions. Oh's findings also indicated that the overall comprehension of the passages significantly improved for both high and low language proficiency readers.

Kim and Van Dusen's (1998) study investigated the role of prior knowledge and elaboration in text comprehension. The implications were that, if the learner had a high level of prior knowledge, the information presenter did not need to provide elaborations of the main points because the learners may self-generate based on their prior knowledge and vice versa for learners who had low levels of prior knowledge.

Lastly, Yano et al. (1994) study provided considerable, though not conclusive, evidence in support of the view that elaborated texts can provide opportunities for learners to develop effective learning strategies, such as the ability to process texts at a deeper level.

The studies on simplification agree unanimously that it results in distorting the authenticity value of texts (Widdowson, 1978; Davies, 2007) and hindering learners' exposure to natural language (Honeyfield, 1977; Yano et al., 1994; Oh, 2001). This might lead to learners creating misconceptions about language (Goodman & Freeman, 1993). For instance, Crossley et al.'s (2007) found that simplified texts provide ESL learners with more coreferential cohesion and connectives that are more common and rely more on frequent and familiar words than do authentic texts.

Elaboration is seen as a compromise between those who advocate the exclusive use of authentic reading materials and those who suggest that pedagogically modified texts are more appropriate (O'Donnell, 2009). Both Oh's (2001) and Yano et al. (1994) studies support the suggestions that input should be modified in the direction of elaboration because it exposes learners to rich linguistic forms.

The results of studies investigating the effect of simplification on vocabulary learning are inconclusive. For instance, Shirin Zari and Mardani (2011) found that students who read simplified and baseline texts performed better in the test that assesses incidental vocabulary learning than those who read elaborated texts. In contrast, Urano's (2000) and Negari and Rouhi's (2012) studies concluded that lexical simplification did not trigger incidental vocabulary acquisition at all.

Some issues pointed out by Chung in his 1995 review study still remain, such as the relationship between types of modification and vocabulary acquisition. However, some advances have been made, as the findings of research carried out on the effect of lexical elaboration on L2 vocabulary acquisition have been quite consistent.

The results of the studies indicated that elaborating target lexical items can trigger meaning recognition of those elaborated words, but do not assist form recognition of those words (Urano, 2000; Moradian & Adel, 2011; Kim, 2006; Marefat & Moradian, 2008). Some studies (Silva, 2000; Marefat & Moradian, 2008; Moradian & Abel, 2011) further showed that explicit elaboration was more effective in L2 vocabulary acquisition than implicit lexical elaboration. Although implicit lexical elaboration was found to have a positive effect on the recognition of word meanings from reading but only when typographical enhancement was present (Kim, 2006). A more recent study by Abbasian and Mohammadi's (2016) reveals that not only do input modification procedures significantly affect vocabulary development, but also that the elaboration group outperformed the simplification group.

Method

Research design

The current study utilized a qualitative research method with the aim to investigate and evaluate the teachers' approaches to text modification. The data included teacher interviews and sample teaching materials, and they were analyzed using a combination of narrative and content analytical methods. The teachers' text modification methods were categorized using Lorenzo's (2008) model of input modification and then critically analyzed using the theoretical framework generated from a review of over 60 text modification studies.

Data collection and research process

The participants of the study consist of four secondary school teachers who teach non-language subjects to grades seven to nine (pupils' ages between 13 and 16) in English. The teachers come from two schools from Southern Finland. School A is a bilingual school where students can choose up to 50% of their courses in English and the rest in Finnish, whilst school B is a comprehensive school offering an international stream in which all subjects are taught in English except for Finnish language.

The cultural makeup of the student population in school A is fairly homogeneous, with two to three immigrant students in each class of 22–24, and most students have moved up from a bilingual primary school. In contrast, the student cohort in school B is considerably more multicultural, with only a few Finnish students in each class.

The participants were recruited from a pool of 80 Finnish CLIL teachers by emailing information of the study to all Finnish secondary schools in Helsinki and Espoo regions that offer to teach non-language subjects in English. The participants covered a range of subjects both in science and humanities, reducing the possibility of representing subject-specific views.

The profile of teacher participants can be seen in Table 1 below. The participants will be addressed as T1B&G, T2B&G, T3H, T4H, and T5 P&C. The letters B&G, H, P&C indicates the respondent's teaching

subject, as can be seen in the teacher profile table. Biology and Geography (B&G) are commonly taught by the same teacher in Finland, as are Physics and Chemistry. Additionally, because three out of four participants are female and gender plays no role in this study, all teachers will be referred to as “she” in the forthcoming text.

Table 1. Profile of teacher participants

Teacher profile	T1B&G	T2B&G	T3H	T4H
Native Language	Finnish	Finnish	Finnish	Finnish
Subject	Biology & Geography	Biology & Geography	History	History & Civics & English
Length of teaching	5.5 yrs.	20 yrs.	15 yrs.	9 yrs. English 4–5 yrs. Civics 1 yrs. History
Grade and type of class	7–9th grade bilingual class	7–9th grade international class	7-8th grade bilingual class	7–8th grade international class
Teaching qualification	MA in Biology & Geography Teacher Qualification	MA in Biology & Geography Teacher Qualification CLIL teacher qualification	Degree in History, Politics and Eastern Studies, PhD in History, Teacher qualification	MA in English with a minor in History and Civics Teacher qualification
Language of instruction	English and Finnish	English and Finnish	English and Finnish	English
Familiarity with the term CLIL	Not at all	Received training and has been working as a CLIL practitioner for over 10 yrs.	Not at all	Learned the concept in a university course, which inspired her to take the minor

Source: Own elaboration.

In an interview, the participants were asked to describe what adaptations they have made to the original texts and to justify their decisions using the sample materials they provided. Specific attention was also given to how they had considered students' varied language competence during the process of adaptation. The interviews were audio taped and transcribed in full.

The materials that were included in this part of the analysis were made up of the key texts the participants chose to discuss their use of modification techniques in depth. The original and adapted materials available were collected for comparative analysis. Table 2 includes a list of materials collected from teacher participants by subjects.

Table 2. A list of materials used for the analysis of text modification methods

Teacher	Materials used for the analysis of text modification methods
T1B&G	8th grade heart & blood unit teaching slides (English/Finnish version), unit information sheets (original in English/adapted article) 7th & 8th grade climate unit teaching slide (English) and the textbook page in Finnish where the slide was adapted from
T2B&G	7th grade water environment unit information sheets
T3H	8th grade reading text on the Finnish Civil War (original/adapted article)
T4H	7th grade French revolution information sheet adapted from https://www.ducksters.com/history/french_revolution/ 7th grade reading article "Aftermath of the Napoleonic Wars and the Congress of Vienna" from https://coshea.weebly.com/national-instability.html 7th grade reading worksheet "How Did France Change Under Napoleon," downloaded from www.SchoolHistory.co.uk

Source: Own elaboration.

Following an initial identification of adaptation methods based on teachers' accounts and textual comparisons, the data were reorganized and analyzed using Lorenzo's (2008) three processes to adaptation. For the purpose of a more detailed linguistic categorization, this study combined the works of Lorenzo (2008) and Moore and Lorenzo (2007), adapting the original input modification strategies model in Lorenzo (2008), as is shown in Table 3 below:

Table 3. Input modification strategies

Process	Linguistic Dimension	Final aim	Operating Principle	Main Strategies Used
Simplification	Sentence-framed changes	To reduce linguistic complexity for increasing understanding	Simplify, not amplify	<ol style="list-style-type: none"> 1. Short and simple sentences 2. Movement of topics to front positions in the sentence 3. High frequency vocabulary 4. Higher ratio of content word to functors 5. Avoidance of sentence embeddings 6. Limited range of syntactical and semantic relations 7. Lexical simplification 8. Search for L1 cognates
Elaboration	Text-framed changes	To elaborate the discourse To make it cognitively simpler while keeping linguistic difficulty	Amplify, not simplify	<ol style="list-style-type: none"> 1. Highlighting of important concepts 2. Removal of pronouns with unclear antecedents 4. Lower type-token ratio 5. Maintenance of original complexity in syntax and lexis 6. Adding redundancy through repetition, paraphrase and retention of full noun phrases
Rediscursification	Discourse-framed changes	To adapt meaning, form, and format to a new instructional situation redesigned texts	Deepen, not broaden	<p>1. Changes in text typology: from ideational to involving texts</p> <p>2. More overt interactional structure: Questions inserted, explicit engagement devices: writer-oriented features (explicit markers of evaluation and attitude, hedges, boosters), reader references, meaning adaption: high activity levels, ideational reduction, secondary ideas are shortened</p>

Process	Linguistic Dimension	Final aim	Operating Principle	Main Strategies Used
				3. Format adaptation: Asides, footnotes, graphs, visual aids, glossaries, parenthetical information, pre-tasks, search for L1 cognates, provide learners with models of pedagogic discourse, replace technical vocabulary to semi technical vocabulary

Source: adapted from Lorenzo (2008) and Moore and Lorenzo (2007).

This study benefited from a creative advantage by utilizing different methods of organizing and describing the phenomenon at hand. In addition, to organize the techniques by Lorenzo's (2008) model of input modification, three different ways to categorize these modification processes were thought to have the potential to reveal valuable results: by individual teachers, by subjects, and by types of teaching materials.

A thorough survey of over 60 studies on the effects of approaches to input modification was conducted to help create a theoretical framework for evaluating text modification strategies. The following criteria were identified as the most encompassing of the recurring themes.

1. Reading comprehension
 - a. language proficiency
 - b. context and prior knowledge
2. Authenticity
3. Vocabulary

Results and Discussion

Using Lorenzo's (2008) model of input modification, Table 4 below shows a breakdown of specific strategies identified based on an in-depth analysis of the materials provided by the teacher participants:

Table 4. Text modification strategies used by the teacher participants

Simplification	Lexical	<ol style="list-style-type: none"> 1. Use high frequency words 2. Remove unnecessarily difficult vocabulary 3. Search for L1 cognates 4. Higher ratio of content word to functors 5. Remove idiomatic language 6. Limit the use of synonyms 7. Use translation
	Syntactic	<ol style="list-style-type: none"> 1. Sentences are shortened into phrases to convey ideas. Relations between ideas are marked with punctuations and symbols such as colons and arrows. 2. All questions are formulated with wh-question marks, short simple sentence structures and nearly no clause
Elaboration	Adding redundancy	<ol style="list-style-type: none"> 1. Adding redundancy through paraphrase: add English definition
Rediscursification	Typology	<p>Changes in text typology: typeface</p> <ol style="list-style-type: none"> 1. New terminologies are highlighted in bold and underlined in the English version 2. Paragraph to bullet points (text describing a process) 3. Texts are divided into small sections in different shaped text frames 4. Shorten the text
	Format	<ol style="list-style-type: none"> 1. Parenthetical information 2. Glossary
	Insert questions	<ol style="list-style-type: none"> 1. Create a set of questions at the end of a text
Mix	Simplification & elaboration	<ol style="list-style-type: none"> 1. Reduction and restructure

Source: Own elaboration.

Simplification

The present results show that less experienced teachers with no CLIL training used simplification strategies on all three levels: lexical, syntactic, and lexical-syntactic, with lexical being the most common level. More experienced teachers and the teacher with CLIL qualification, however, did not use any simplification strategies.

The various strategies of simplification can be demonstrated using the original (Figure 1.) and adapted excerpts (Figure 2.) from T1B&G's 8th grade teaching material:

Figure 1. An extract from the original text “Heart and its functioning”

Regulation of the Heartbeat

When you run up a flight of stairs or are startled by a sudden noise, your heart is likely to beat faster than it does when you are at rest. A specific region of your heart muscle, known as the [pacemaker](#), sets the rate at which you heart contracts (Figure 30-7). The pacemaker is located in the wall of the right atrium. It generates electrical impulses that spread rapidly over the walls of both atria, making them contract. The impulses then spread to a region of the heart called the [AV node](#) (atrioventricular node). From there, the electrical impulses spread to the ventricles, causing them to contract. Te contracting ventricles propel blood to the rest of the body.

The pacemaker ensures that the heart beats in a rhythmic cycle. During the relaxation phase, called diastole, the atria and ventricles are relaxed, allowing blood from veins to enter the heart. The contraction phase is called systole. First the atria contract, and blood is forced into the ventricles, which are relaxed. This cycle repeats about every second when you are resting.

The pacemaker is controlled by both the nervous system and the endocrine system. Two sets of opposing nerves control the pacemaker by speeding it up and by slowing it down. Hormones secreted into the blood also control the pacemaker. For example, the hormone epinephrine, also called adrenaline, increases heart rate when the body is under stress.

Source: Original text T1B&G found from an Ebook.

Figure 2. An extract from the resulting text of “Heart and its functioning,” modified by T1B&G

Regulation of the Heartbeat

When you run up a flight of stairs or are startled by a sudden noise, your heart is likely to beat faster than it does when you are at rest. **Heart muscle generates its own contractions.** The heart rate is controlled by both the **nervous system** and **hormones** (=endocrine system), such as **adrenaline**, which increases heart rate when the body is under stress. (Fight or flight).

During the **relaxation phase**, called **diastole**, the atria and ventricles are relaxed, **allowing blood from veins to enter the heart.** The **contraction phase** is called **systole.** **First the atria contract, and blood is forced into the ventricles, which are relaxed. Then the ventricles contract, pumping blood into arteries, while the atria are relaxed.** This cycle repeats about every second when you are resting.

Source: T1B&G's adaptation of the original text in Figure 1.

Here, the teacher decided to scaffold the learning by limiting the number of new terms introduced to students. She strategically removed the information on the more specific regions, such as the pacemaker of the heart muscle and, as a result, lowered both linguistic and cognitive demands by refocusing students' attention on the generation of contractions. This was done to ease students into learning more about the regulation of the heart rate that follows. Another method used is the reduction of the number of synonyms introduced. For instance, "the hormone epinephrine," the synonym for "adrenaline," was not mentioned in the adapted text.

The teachers simplified the texts for the purposes of improving comprehension, removing irrelevant content and sensitizing students to the key learning content and vocabulary. They reported that the better they knew a group, the more confidence they had in deciding what content needed simplifying.

As was mentioned previously, the results of the current studies on the effects of simplification on reading comprehension have been inconclusive and contradictory. Blau (1982) argued that simplified texts may appear to satisfy readability criteria for lower ability readers, but they did not necessarily guarantee understanding. This was supported by Widdowson (1978) and Davies (2007), who argued that simplified lexis was not necessarily semantically easier to understand, and simple words were likely to be highly multi-faceted.

Some benefits of simplification were found by previous studies, namely that students perceive simplified texts more positively (Ali, 2017) and have improved scores in an exam situation (Abedi et al., 1997; Kong, 2017) suggesting that comprehension improves. Despite risking developing inappropriate reading strategies for unsimplified English in the long run (Honeyfield, 1977), some teachers believed in improving comprehension by using simplified materials (Rix, 2009).

The studies currently available can also serve as a useful guide for teachers to take into account other factors that affect the interaction between content and linguistic simplification, such as students' language proficiency levels (Crossley et al., 2014; Oh, 2001; Keshavarz, Atai, & Ahmadi, 2007) and prior knowledge. The results of Keshavarz et al.'s (2007) study showed that linguistic simplification facilitated the comprehension and recall of the content-unfamiliar text, whereas it

impeded the comprehension and recall of the content-familiar text. These results seem to justify the teacher participants' approach to introduce new topics using simplified texts and exposing learners to more authentic texts as extended reading as they become more familiar with the new topic.

However, it comes as no surprise that the previous studies have been unanimous on the fact that simplification diminishes the authenticity value of texts (Widdowson, 1978; Davies, 2007). Text simplification can hinder natural language development or impede language acquisition by removing linguistic items that the reader needs to learn (Honeyfield, 1977; Yano et al., 1994; Oh, 2001). In addition, Goodman and Freeman (1993) made a case that the use of simplification creates misconceptions about language. Perhaps it is on these solid accounts that the experienced teachers have decided to refrain from using simplified materials.

As far as vocabulary learning is concerned, the current study shows that the lower secondary school CLIL teachers prioritized the learning of the content vocabulary. In cases where the teachers modified lexical items, the purpose was to simplify, to delay the learning of the higher-level technical terms, or to remove idiomatic linguistic items that cause confusion. Hence, the teachers took a more deliberate, albeit unsystematic and intuitive, approach to introducing content vocabulary learning. The review of studies on input simplification and vocabulary acquisition witnessed inconsistencies among the results on incidental vocabulary learning. Hence, it is recommended for teachers not to simply rely on students learning vocabulary incidentally from simplified input but make use of in and out of classroom activities that aim at intentional vocabulary learning.

Elaboration

According to the data, only one further defined type of elaboration technique was detected, that is, adding redundancy by paraphrasing. Both experienced and inexperienced teacher participants used this technique. It is important to note that the data of the current study is not quantitative, so the fact that only one elaboration strategy was identified does not imply that elaboration was used less frequently than simplification.

The input elaboration technique identified in the current study is adding redundancy through paraphrase. An example of the technique used in practice can be found in the resulting text “Regulation of the Heartbeat” in the previous section, where the teacher paraphrased the term “endocrine system” with “the nervous system and hormones,” used it in the main sentence and added the new term in brackets (=endocrine system).

Negari and Rouhi (2012) investigated the effects of two types of lexical elaboration: parenthetical and non-parenthetical and the results revealed that both types of elaboration were conducive to incidental vocabulary acquisition, but comparatively, the parenthetical elaborated group outperformed the non-parenthetical elaborated group on two incidental vocabulary measures.

The main purpose of adding redundancy through paraphrasing in the sample materials received was to explain linguistic items that were unfamiliar to students. It is also used on occasions to draw a connection between the current item and students’ previous knowledge. Speaking of prior knowledge, Kim and Van Dusen’s (1998) study found that it is necessary to provide elaboration of the main points for students with low levels of prior knowledge, but it is counterproductive for learners with high levels of prior knowledge.

We have not seen, however, examples of other common strategies listed by Moore and Lorenzo (2007), such as removal of pronouns with unclear antecedents, lower type-token ratio and adding redundancy through repetition and retention of full noun phrases.

The previous empirical studies that compared simplification and elaboration revealed that elaboration improves comprehension as successfully as simplification (Oh, 2001; Urano, 2000), and the former is preferable since it preserves the naturalness and immediacy of the text (Moradian et al., 2013). The positive effect of elaboration is not only on L2 comprehension but also on lexical aspects of language learning, e.g., incidental vocabulary acquisition (Shirin Zarii & Mardani, 2011; Urano, 2000; Moradian & Adel, 2011) and meaning recognition (Kim, 2006). It is, therefore, safe to encourage CLIL teachers to make use of elaboration and experiment with various elaboration techniques.

Rediscursification

My analysis shows that rediscursification was the most popular approach to text input modification among the teacher participants. Every teacher employed at least one of the sub-techniques of rediscursification as listed in Table 4 in order to reappropriate the language and format of the original text with the intention of improving the learnability of the text. In general, teachers operate much more on a section-level than a whole-text level. The manifold ways of rediscursification are shown here in the reading text adapted by T2B&G (Figure 3).

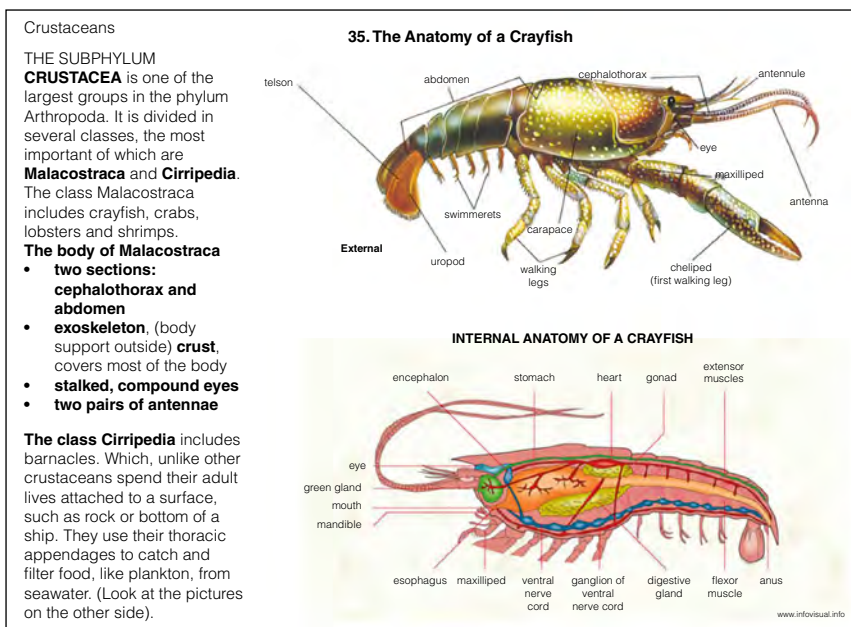
The teacher first rewrote the third paragraph about the body of Malacostraca, changing sentences to words and phrases and organizing them under bullet points. Then, she changed the typeface by highlighting the key information in bold. To demonstrate parts of the crustaceans described in the text more clearly, she added diagrams of the internal and external structure of crustaceans, as none of the pictures in the source texts were anatomical.

None of the other rediscursification strategies that would result in changing any linguistic features and complexity of the text were found, namely, meaning adaptation, explicit engagement devices, and models of pedagogic discourse. The techniques identified among the participants' materials can be categorized under typology, format, and insert questions. These kinds of techniques used by the teacher participants were classified and termed by Bhatia (1983, p. 46) as "easification."

Bhatia (1983) defines "easification" as techniques aimed at making texts more accessible to the learners without modifying their content or form. He argues that easification is a more effective and quicker way of achieving the goal of bringing the text closer to the reader's level of linguistic competence. The purpose of this is not to help comprehension directly, but to guide learners through the text, thereby helping them with their intake.

In terms of pedagogical implications, Bhatia sees easified materials as having tremendous potential for a task-oriented methodology for classrooms in which the emphasis is on the learner as a performer and not as a passive spectator. In addition, most of the easification devices have the potential to be transformed into various language activities in the classroom.

Figure 3. A student worksheet adapted from various sources



Source: Reading material adapted by T2B&G.

Conclusion

All three approaches to text modification, i.e., simplification, elaboration and rediscursification, have been identified in the teacher participants' materials adaptation process. Less experienced teachers used a wide variety of the substrategies of simplification. However, experienced teachers avoided using simplification, perhaps intentionally. The elaboration technique, adding redundancy by paraphrasing, is adopted by both experienced and inexperienced teachers, while none of the other substrategies are identified. Rediscursification is the only technique that can be identified in every participants' input adaptation practice. The use of the type of rediscursification strategies among the subjects of this study, however, is limited to changes in text typology and format adaptation.

From the review of the literature on the effects of input modification, it can be claimed that elaboration devices seem to enhance

L2 comprehension and vocabulary development. The same cannot be as confidently stated about the effect of simplification on either comprehension or vocabulary development. Besides, language proficiency, familiarity of the context and learners' prior knowledge are three major factors that interact with L2 comprehension. Both the processes of simplification and elaboration of input distort the naturalness of the language, but the latter seems to preserve the richness without adding cognitive load; therefore, it is considered to be more pedagogically recommendable. Rediscursification was identified only relatively recently by Moore and Lorenzo (2007) and its effects on comprehension and learning have thus not been looked into. This technique can be demanding on material adaptors' time, knowledge, and creativity, but these techniques are seen as an upgrade of elaboration on access to natural language and learner autonomy.

Given that the majority of CLIL teachers produce their own materials, it is paramount that they should be kept up to date with enough training and resources to implement text adaptation with the goal to meet the linguistic and content needs of their learners. In addition to training lessons on input modification strategies, it is important to equip CLIL teachers with essential skills to carry out action research aimed at measuring the effects of the resulting texts on comprehension and language learning.

The present study bears the limitations concerning the input modification studies that were used to create the main theoretical framework. The findings show that the research in this field is largely inconclusive, especially in terms of language acquisition. The measures of these studies have also been questioned, e.g., response types (O'Donnell, 2009; Urano, 2000), nominal scale (Urano, 2000) as well as variables such as reaction time (Urano, 2000), frequency, and amount of adaptation (Urano, 2000).

This study moves us a step closer to setting quality criteria in material design by surveying the current available research on evaluating the effectiveness of approaches to text adaptation. The finding suggests that it is not yet possible to make solid claims on the principles of using simplification given that the results of the studies currently available are largely inconclusive. More research in this field is needed to eliminate the previously mentioned limitations in input adaptation

studies. The studies on the effect of text modification strategies on language learning available have so far seemed to be limited to the area of vocabulary development. Future research should also investigate the effect on other aspects of language skills involved in the reading comprehension process, such as grammar, inference and integration, and knowledge and use of text structure.

Another potential area for further study could focus on observing the patterns and research gaps by classifying existing text modification studies by age and language proficiency level of the participants. Currently, only a handful of studies compare the effectiveness of input adaptation for learners with different levels of language proficiency (e.g., Oh, 2001; Crossley et al., 2014).

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