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List of abbreviations

CLIL	Content and Language Integrated Learning
CDF.....	Cognitive Discourse Function
L2.....	second language
CBI.....	Content-Based Instruction
EU.....	European Union
VBS.....	Vienna Bilingual Schooling
ZSE.....	Zentrum für Schulentwicklung
ELT.....	English Language Teaching
SOLO.....	Structure of the Observed Learning Outcome
BICS.....	Basic Interpersonal Communication Skills
CALP.....	Cognitive Academic Language Ability
HAK.....	Handelsakademie
BWL.....	Betriebswirtschaftslehre
IM.....	International Marketing
OED.....	Oxford English Dictionary
ROI.....	Return on Investment
TM.....	Tourism Management
BM.....	Business Administration and Macroeconomics
BMBF.....	Bundesministerium für Bildung und Frauen
EFL.....	English as a Foreign Language
TT.....	Team Teacher
VOICE.....	Vienna Oxford International Corpus of English
VWL.....	Volkswirtschaftslehre

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1. Introduction

Due to globalization and the on-going demographic changes within Europe, the European educational system calls for a pedagogical reform which focuses on multilingualism as well as increased exposure to the international lingua franca English in particular. Therefore, the innovative approach *Content and Language Integrated Learning* (CLIL), which aims at an integration of both language and subject, has gained significantly in importance over the last decade as it allows students more exposure to the language and therefore improves the learning success of acquiring a foreign language. However, although “language development and content development are not regarded in isolation from each other” (Mohan 1990: 2), CLIL teachers often fail to find a balance and tend to privilege either the language or the subject.

In order to facilitate an equal integration of both factors, Dalton-Puffer (2013: 216) suggests in her article “A construct of cognitive discourse functions for conceptualizing content-language integration in CLIL and multilingual education” that this problem of unbalanced pedagogies can be resolved by the establishment of “a zone of convergence between content and language pedagogies”. The construct proposes a set of seven *cognitive discourse functions* (CDFs), representing verbalized cognitive processes which help merge content and language pedagogies during learning generating classroom talk.

As existing empirical research on the construct of CDFs is still somewhat limited (Lackner 2012; Kröss 2014; Hofmann & Hopf 2015), the aim of this thesis is to support Dalton-Puffer’s proposal by providing more information concerning the application of CDFs within the context of classroom talk. The focus of the study lies on the specific context of Austrian upper secondary CLIL Economics lessons which were taught in the working language English. In the context of this thesis, six previously recorded lessons taught by three teachers of different qualifications were transcribed and coded with respect to the seven main CDF types as well as CDF passages which were realized exclusively in German or embedded within another CDF passage. Furthermore, the person(s) producing the cognitive discourse function, also called the realizer, was added to the coding scheme and analyzed in terms of the use of CDFs and the dynamics of classroom talk. Lastly, specific passages which were considered as genuinely representative were looked at in more detail in form of a qualitative analysis in order to examine how the CDFs are realized interactionally with respect to language form and meaning.

With the help of these findings as well as consequent conclusions, the thesis does not only aim at adding to existing research, but also at providing pedagogical implication of how CDFs can be used efficiently in Austrian CLIL Economics lessons in order to improve learning outcome while suggesting future research with regard to aspects of Dalton-Puffer's construct which still require empirically grounded support.

2. Defining CLIL: The relationship between content and language

Content and Language Integrated Learning (CLIL) is a generic term which is predominantly used in Europe (Georgiou 2012: 495) and refers to “any educational situation in which an additional and therefore not the most widely used language of the environment is used for the teaching and learning of subjects other than the language itself” (Marsh & Langé 2000: iii). Although there are various definitions of CLIL, Coyle et al.’s description of Content and Language Integrated learning is widely used, stating that “Content and Language Integrated Learning (CLIL) is a dual-focused educational approach in which an **additional language** is used for the learning and teaching of both content *and* language” (2010:1; original emphasis).

This dual focus on language and content is seen as the special characteristic of CLIL, which differentiates CLIL from other pedagogical approaches of which some mainly aim at the acquisition of language competences by using subject content and others use an additional language “only with reference to a subject curriculum” (Georgiou 2012: 495). CLIL, however, aims at acquiring knowledge, skills, and competences in the subject as well as the language of instruction by teaching a content subject using a working language other than the students’ mother tongue (495).

Georgiou (2012: 495) furthermore points out that CLIL can also be seen as a “most recent developmental stage of the communicative language teaching (CLT) approach”, as it shows common features along the intention of providing the students with a high amount of exposure to second language input while engaging actively in authentic and meaningful communication. In addition, CLIL features basic characteristics of task-based learning as the students “focus on real content-learning tasks [...] and use language with a focus on the task rather than the language itself thus promoting incidental learning” (495-496).

As CLIL is practiced in various academic settings and geographic areas, there is no common understanding of the conceptualization of CLIL with regard to its form. Some believe CLIL to focus on the classroom-level and to be “actual instructional techniques and practices” (Ball & Lindsay 2010; Hüttner & Rieder-Bünemann 2010, quoted in Cenoz et al. 2014: 3), whereas other scholars view CLIL in curricular terms (Langé 2007; Navés & Victori 2010, quoted in 3). However, considering CLIL as part of the curricula is argued to be somewhat problematic as the curricular design may include CLIL solely in form of a project, neglecting the use of the foreign language as “the medium of instruction for a whole school subject” (Coyle 2007, quoted in 3). A third conceptualization of CLIL emphasizes its interplay of constructivism and theoretical foundations with regard to second language

acquisition (Marsh & Frigols 2013, quoted in 3). Consequently, no commonly accepted definition for CLIL can be found, as in some cases CLIL is described to be “a whole program of instruction”, whereas in other cases CLIL is seen as “isolated lessons or activities conducted in an additional language” (3). Taking all definitions into consideration, one common feature remains, namely the use of an additional language as the medium of instruction, meaning any other language than the first language, including minority languages, second languages, and foreign languages (Marsh 2002: 17, quoted in 3).

As there is no widely accepted definition of CLIL, let alone a common understanding of the forms CLIL can take, “CLIL is often referred to as an ‘umbrella’ term” (4). Due to the umbrella term’s inclusiveness of various forms, definitions, and approaches of which some may be seen as primarily language or content teaching (Marsh 2007: 6), it becomes challenging to set clear guidelines of which learning environments can be counted as CLIL, with the exception of educational settings which exclusively focus on language learning “with absolutely no content as a vehicle for instruction” (Cenoz et al. 2014: 4), as already indicated by the name which stands for content and language integration.

With regard to Coyle et al.’s (2007) definition, one can argue that numerous pedagogical practices can be regarded as CLIL, given that they are taught through a foreign language and “*both language and the subject have a joint role*” (Marsh 2002: 58, quoted in Cenoz et al. 2014: 2; original emphasis). Therefore, the dual role of the subject and language can be interpreted and weighted in various ways. Ting (2010: 3 quoted in 22), for example, states that the language – subject balance advocated by CLIL is “50:50”, arguing that neither language nor content should play a more dominant role in CLIL classrooms. However, Cenoz et al. (2014: 2) add that research shows that in practice such a strict balance is challenging to realize. Marsh (2002, quoted in 2-3) argues that the weighting of language and content is not necessarily relevant as long as there is a consistent dual focus on both aspects, may it be “90 per cent versus 10 per cent” or vice versa. Yet, this rather flexible definition of relation between content and language in the CLIL classroom is contradicted by Cenoz et al.’s argument that “a view of CLIL that embraces such wide variation in content and language instruction is problematic because it is difficult to imagine a traditional non-CLIL L2/foreign language class with a less than 10 per cent focus on some type of content”, as well as establishing a broad and “overly inclusive” definition of CLIL (2014: 3).

With respect to the content side of the balance, Georgiou (2012: 498) argues that the content-driven aspect of CLIL is immensely important as it distinguishes CLIL from other solely

language-driven approaches, which may refer to content but aim exclusively towards language acquisition.

It is reasonable, therefore, to accept that the language aspect of a CLIL programme will also be content driven, in that it will be generated from the specific needs of the particular subject taught and will assist students in better dealing with the requirements for the subject. (Georgiou 2012: 499)

Overall, three prototypical characteristics of CLIL in its present state have been summarized by Dalton-Puffer et al. (2014: 215):

- 1) The languages used in content and language integrated learning are mostly internationally more or less dominant languages, such as English, French, Spanish, and German. As the world becomes increasingly connected, English has gained great significance in its role as the universal language, which is reflected in the frequent use of English as lingua franca in CLIL.
- 2) Secondly, it is important to note that CLIL is to be seen as an addition to general foreign language teaching and does not happen instead of it.
- 3) As CLIL is “timetabled as content lessons”, it is therefore taught by teachers who are specifically trained in the subject field and who assess the students’ achievements with regard to the content.

Dalton-Puffer et al. (2015) furthermore stress that CLIL can therefore not be classified as a form of Content-Based Instruction (CBI), which will be looked at in the following section.

2.1. Development of CLIL in Europe

Changes within the society and industrial inventions have strongly influenced mobility and have led to globalization. The knowledge of foreign languages has gained significantly in importance, becoming a crucial “social and economical asset for both individuals and societies” (Nikula et al. 2013: 71). Yet, bilingualism as well as being capable of speaking more than two languages besides one’s first language dates back over more than 5000 years (Coyle 2007: 543).

As the economy underwent a globalizing process, European societies whose interest lay in being able to participate and compete within this internationalized context started to acknowledge English language skills as one of the most fundamental competences as English was considered to be the universal and commercial language within the European context (Lo & Lin 2015: 261). Due to this development, many parents called for “educational opportunities for their children that would support their multilingual capacities” (Nikula et al. 2013: 71), as the traditional EFL context did not provide the students with enough exposure to English (Lo & Lin 2015: 261). These calls have been responded to by educators, such as teachers and schools, as well as policy-makers who decided to follow the model of “bilingual education in which a second, foreign or additional language is used as the language of instruction in non-language content subjects” (261).

Drawing on established immersion and bilingual education movements in the United States of America and Canada, respectively, it became of growing interest for European countries in the 1990s to cooperate and exchange common understandings of bilingual education in order to adapt the high diversity of European approaches and to agree on a shared terminology which fit the European model (Coyle 2007: 544). There are three reasons why Europe did not want to simply adopt an existing terminology. First, some already established terms were not favored as they showed strong correlations with Canadian models and did not refer to similar contexts as European bilingual programs. Secondly, the educational programs in Europe differed considerably in origin and purpose, as “some seeped in tradition and heritage, [with] others focussing [sic] on responses to complex problems, or to promote future thinking in terms of curriculum design and globalization” (545). Lastly, pioneering educationalists in Europe believed that existing terminology would not take emerging models and new pedagogical initiatives into consideration (545).

Finally in the 1990s, a group of specialists, “including educational administrators, researchers, and practitioners” (Marsh 2002, quoted in Cenoz et al. 2014: 1) launched the term

‘Content and Language Integrated Learning’ (CLIL), resulting in an abrupt rise in the number of initiatives supporting CLIL, which were financially subsidized by the European Commission and the Council of Europe as CLIL was received as the solution for Europe’s need to improve foreign language education (243). Moreover, the European Union hoped to influence national politics in order to promote multilingual education in regions where foreign languages were not part of the political agenda (Dalton-Puffer 2014: 214). In addition, further reasons for implementing CLIL were to improve traditional foreign language learning and to clear the path for inventive and new pedagogical concepts with regard to the content subject as well (214).

Starting 1995, the European Union policymakers, who are considered to be the biggest financial and political supporters of CLIL, began to persistently advocate CLIL with respect to relevant policy documents, such as European Commission 1995, 2003, 2005, and 2008, to name a few (Georgiou 2012: 496). Thereby, bilingual programs did not only receive financial support but also helped respective research in the field of foreign language teaching, the development of useful classroom material, and teacher training (496). CLIL was seen as a tool to accomplish the 1+2 policy aim stated in the European Union’s White Paper on Education and Training in the year 1995, claiming that “all EU citizens should master two community languages in addition to their mother tongue” (Nikula et al. 2013: 71). These language learning aims have been part of the European Union’s political agenda ever since and represent an important aspect of CLIL. Moreover, they are described to not only consist of “the ability to understand and communicate in more than one language” but to also constitute “a desirable life-skill” (European Commission 2008: chapter 14, quoted in Hüttner et al. 2013: 270), aiming for a multilingual Europe where the knowledge of at least two foreign languages besides one’s first language becomes the norm (European Commission 2009, quoted in 270). The Council of the European Union affirmed in a press release in May of 2005: “This method [CLIL] can contribute to individual and collective prosperity and can strengthen social cohesion. The method thus presents a practical tool for promoting European citizenship while increasing student and worker mobility” (quoted in Georgiou 2012: 496).

2.2.1. Development and present status of CLIL in Austria

As bilingual education, with CLIL in particular, and globalization was on the rise in Europe in the early 1990s, Austria's capital city Vienna gained in geopolitical importance due to current political developments. Therefore, the Austrian Federal Ministry of Foreign Affairs addressed the Austrian Board of Education to help establish school settings which support native English speaking children, as they expected a dramatic growth in immigration of people who "were employed in international organisations and companies moving to Vienna" (Eurydice 2004/2005: 6).

In order to be able to offer the bilingual students an appropriate learning environment, the Austrian Board of Education developed the concept of Vienna Bilingual Schooling (VBS), a "non-fee paying state schooling", proposing that the students should be taught "according to the Austrian national primary and secondary curricula", while the teachers use "two equal languages of instruction" (German and English) (6). As the lessons are held in both English and German, it was suggested that half of the students' first language should be German, whereas the other half of the students should consist of English native speakers (6). In addition, the teachers are qualified English and German-speaking primary and secondary teachers who work in teams of two, also known as team-teaching, while many English-speaking teachers are native speakers who are employed by the Vienna Board of Education for this specific reason (6-7).

When looking at the development of CLIL at secondary level, the Austrian model called 'Fremdsprache als Arbeitssprache' (in English *foreign language as working language*) was established in 1991 within a project in Graz, which is nowadays known as the Austrian Centre for Language Competence, 'Zentrum für Schulentwicklung' (ZSE). After the publication of the first results of the project in 1993, a first national conference on 'Englisch als Arbeitssprache' (in English *English as a working language*) (7) was held in order to advertise the concept. In addition, the ZSE project group continued to work on the development of "teaching materials aimed at supporting teachers interested in CLIL" (7). Reports show that from then on, there has been a steady growth in the amount of CLIL activities as well as the diversity of organizational forms (7), "ranging from 'mini-projects' with just a few lessons" to a great selection of subjects which are taught in foreign language (5). Moreover, modern textbooks show an increase in the use of foreign languages with regard to articles and abstracts (5). Ultimately, CLIL became part of the Austrian School Education Law in

paragraph 16/3, which builds the legal basis for schools offering CLIL activities (Jusline 2016):

Darüber hinaus kann die zuständige Schulbehörde auf Antrag des Schulleiters, bei Privatschulen auf Antrag des Schulerhalters, die Verwendung einer lebenden Fremdsprache als Unterrichtssprache (Arbeitssprache) anordnen, wenn dies wegen der Zahl von fremdsprachigen Personen, die sich in Österreich aufhalten, oder zur besseren Ausbildung in Fremdsprachen zweckmäßig erscheint und dadurch die allgemeine Zugänglichkeit der einzelnen Formen und Fachrichtungen der Schularten nicht beeinträchtigt wird. Diese Anordnung kann sich auch auf einzelne Klassen oder einzelne Unterrichtsgegenstände beziehen. Zwischenstaatliche Vereinbarungen bleiben davon unberührt.

This paragraph, which is published in German, discusses the situation where there is a high number of foreign language speakers in a class or the general interest of teaching a subject in a foreign language in order to improve students' language skills. In this case, the principal may apply for authorization at the assigned education authority as long as no students as well as the no subject areas are being impaired. Furthermore, this law can be applied to either individual classes or subjects, however, it does not have any influence on bilateral international treaties. Besides the provisions stated in the national school law as well as the rule by a ministerial directive to offer each student "the possibility to take exams in the constitutional majority language German", there are no conditions with regard to the learning goals or curricular guidelines (Hüttner et al. 2013: 271). As a result, CLIL can easily be offered by all types and levels of schools, may it be general school, primary or secondary education, academic, or vocational, CLIL and forms of CLIL programs may be provided in order to suit "the school's resources and the students' or parents' needs" (271).

According to Abuja (1998: 139), there are four types of CLIL which are most commonly practiced in Austria:

- 1) English as a working language in regular content lessons where subject contents are taught and discussed using English.
- 2) Particular language skills are developed in interdisciplinary, cross-curricular classes in order to acquire subject-specific expressions in the respective foreign language, such as verbalizing observations, describing experiments, comparing and analyzing data, etc.).
- 3) English as a working language is used in the context of small projects in order to promote students' interests and talents.
- 4) Content lessons of one or more subjects in the context of standard schooling are being continuously taught in a foreign language.

As there are no specific requirements concerning teacher qualification, most of all CLIL educators are qualified general knowledge subject teachers who did not undergo a formal training in foreign language teaching or language teaching in general. However, some CLIL teachers have a diploma in both content subjects and English Language Teaching (ELT) (Hüttner et al. 2013: 273). Due to Austria's rather weak language management with regards to Content and Language Integrated Learning, CLIL teachers enjoy a remarkable autonomy, as they decide whether they see themselves fit to teach CLIL as well as which "materials and methods they wish to use" (279), which does not only give them educational freedom but also comes with greater responsibility.

Furthermore, Gierlinger et al. (2010, quoted in 271) point out that only a small amount of CLIL teachers accept suggested curricular guidelines and material provided by workshops and online websites, resulting in their practice being "exclusively guided by experiential criteria and beliefs of the individuals involved". It is therefore up to each teacher's belief of how to weigh language and content in Austrian CLIL classes.

Overall, the legal basis for CLIL and the consistently increasing amount of classroom material as well as positive feedback helped CLIL build a strong foundation in the Austrian school system. Nevertheless, one must consider that the success of CLIL does not only rely on school authorities but very importantly also on the teachers' competencies, commitment, and training as well as the parents' support and encouragement.

In Austria, Content and Language Integrated Learning as well as all other pedagogical concepts related to CLIL have experienced an impressive adoption rate and positive feedback. This perception of CLIL in Austria is viewed by Hüttner et al. (2013: 268) to be reflected in the nation's "decisions on foreign language pedagogy [...] such as the adoption of CLIL in Austrian mainstream schooling". Hüttner et al. (2013: 268) furthermore point out that it is the schools and teachers who carry CLIL forward as "numerous schools in all sectors of the education system run CLIL modules of whole CLIL streams, developing them in response to local needs and resources" (271).

2.2. CLIL, CBI, and immersion: same but different?

According to Lasagabaster (2008: 32), there are various other educational programs besides CLIL which focus on both language and content,

such as content-based language instruction, content-enhanced teaching, integration of content and language, theme-based language teaching, content infused language teaching, foreign language medium instruction, bilingual integration of language and disciplines, learning through an additional language, foreign languages across the curriculum, or learning with languages [...].

Although CLIL is positioned alongside bilingual education, immersion, and CBI, these terminologies must not be mistaken to share the same educational goals and theoretical concept as CLIL. In spite of certain common elements, such as the focus on language and content, CLIL distinguishes itself from the previously mentioned programs in its “integrated approach, where both language and content are conceptualised on a continuum without an implied preference for either” (32). Furthermore, as CLIL originates from the European context, its forms are diverse due to Europe’s heterogeneous sociolinguistics and politics, which required CLIL to be adaptable to heterogeneous settings with regard to languages and students’ age, ranging from kindergarten to universities and beyond (Coyle 2007: 545). Cenoz et al. (2014: 13) also draw on this line of argument, stating that due to CLIL’s heterogeneity it “is best conceptualized as an umbrella term” as it includes a great selection of educational programs and learning settings, where authentic content is the key for foreign language learning.

With reference to the relationship between CLIL and immersion programs, Cenoz et al. (2014: 5) furthermore point out the crucial need for the term CLIL, since immersion, which originated from Canada, as well as alternative programs do not fit the European educational situation and are therefore not favored to be adopted by European countries. Whereas CLIL primarily focuses on the integration of content and language as well as foreign language learning by combining both pedagogies, immersion programs, which can be considered to be a form of CBI programs, mainly aim at the acquisition of the second or a foreign language by using it for academic instruction (2014: 5). Cenoz et al. (2014: 5) display an analysis of the different types of CBI with regard to their weighing and integration of language and content. Thereby, Cenoz et al. (2014: 6) point out that

Met distinguishes different types of CBI using a continuum that goes from content-driven instruction to language-driven instruction. Immersion programs are placed toward the content-driven end of the continuum (Met 1998). Content-driven instruction has content learning as priority and language learning is secondary (Met 1999). In fact, as Genesee and Lindholm-Leary (2013) point out,

in immersion programs, language learning is often incidental to learning prescribed academic knowledge and skills.

Alternatively to both Genesee and Lindholm-Leary's (2013) as well as Met's (1998) arguments, which state that immersion is rather content-driven than language-driven, Marsh (2008: 235) contradicts this thought by claiming that CLIL's clear focus on content is to be considered the most distinctive difference between CLIL and immersion (quoted in Cenoz et al. 2014: 9-10). Furthermore, advocates of CLIL point out that CLIL approaches language and content integration in a far more systematic and planned way (Coyle 2008; Coyle et al. 2010: 6, quoted in 10). In addition to the language-content distinction, Nikula et al. (2013: 71) argue that a further distinguishing feature of CLIL is the use of a foreign language which is barely present in the students' social lives outside the classroom in contrast to certain cases of immersion programs where the language of instruction is relatively present in the social context outside of the classroom. Thereby, the CLIL classroom forms the primary setting for the students to be exposed to the foreign language.

One can see that CLIL and CBI as well as immersion show certain dissimilarities which have already been highlighted by many advocates of CLIL (Pèrez-Canado 2012, quoted in Cenoz et al. 2014: 5). Whereas the balance of content and language is only one aspect which can be analyzed with regard to differences, other features, such as the language used for instruction, teachers' training and students' profiles and pedagogical goals can be taken into consideration.

2.3. The balance of language and subject pedagogy

As mentioned in the previous sections, Austrian CLIL teachers practice autonomously and are therefore free to decide how much attention they want to pay to the pedagogy of the content subject as well as the pedagogy of the language. This dual focus in CLIL on content and language and the “presumed balance in curricular” have been in discussion by many researchers, educators, and policy-makers as there is no common agreement on how much language pedagogy should actually weigh, considering that, i.e. in Austria, CLIL classes are timetabled as content lessons (Hüttner et al. 2013: 278).

Clearly, CLIL is not constructed as an alternative to EFL classes or, indeed, as a response to dissatisfaction with EFL provision. CLIL is seen as an extra provision of English practice, made more enjoyable precisely by the absence of clear curricular aims and thus also forms of assessment for the language component of the class. (278)

To summarize Hüttner et al.’s statement, CLIL may not be mistaken for a complete substitution of language classes but should rather be seen as an addition to existing language courses with the aim of providing more language exposure without evaluating or grading the students’ language skills. This absence of language assessment can be contradicted with the focus on the assessment of knowledge and performance with regard to the content.

According to Dalton-Puffer (2013: 4), studies on the CLIL teachers’ “attention to language” indicate that the focus mainly lies on lexical matters, such as vocabulary. However, Marsh (2007: 17) points out that “purely meaning-focused language learning is not successful”, as the focus on form is just as important to be covered in class to ensure a positive learning outcome. Therefore, a content-driven but language-sensitive approach is preferred by many CLIL teachers, as the content is still considered to be the “centre of the learning-teaching process” while language skills are necessary to communicate the knowledge and to enable successful learning to happen (17). What is more, Marsh (2008, quoted in Cenoz et al. 2014: 9) points out that the content-driven aspect of CLIL allows students to achieve “higher-order language skills” compared to other forms of content-oriented language teaching approaches, as the “that instructional content in CLIL teaching is drawn from academic subjects of disciplines”. Therefore, according to Marsh (2002: 72, quoted in 9), the language aspect cannot be seen as important as the non-language content. Dalton-Puffer (2013: 219) adds on to this thought and claims that not only are the CLIL lessons driven by the content subject but also officially timetabled as such, following the curricular guidelines for the individual subject. However, even though some CLIL teachers show dual formal qualification in both the content-subject pedagogy and language and would, therefore, be

trained to pay attention to language learning in specific, Dalton-Puffer argues that this dualism does seem to affect the integration of the language aspect in CLIL (Dalton-Puffer 2007; Badertscher & Bieri 2009, quoted in Dalton-Puffer 2013: 219). Yet, “[a]chieving full integration of language and content in a dual-focused way is essential for achieving quality CLIL”, as a simple change of the medium of instruction from German to English without considering ELT methods “can easily lead to poor overall outcomes” (Marsh 2007: 6). Therefore, the trivial dilemma of integrating both pedagogies needs to be tackled by linking up both methods in order to prevent conflict and unsuccessful learning.

Dalton-Puffer (2013) thereby suggests establishing a “zone of convergence between content and language pedagogies” (216) by linking the cognitive learning goals of the content-subject with the “linguistic representations” (220) found in classroom conversations and interactions. In order to achieve such a zone of convergence, Dalton-Puffer introduces so-called *cognitive discourse functions* (CDFs), which constitute verbalized “cognitive processes involving subject—specific facts, concepts and categories”, occurring persistently in patterns “during the event of co-creating knowledge in the classroom” (216). However, as learning is a cognitive process which cannot be directly observed, interactions and analogues between teachers and students can be considered the main source of information with regard to the observation of verbal actions where knowledge is constructed interactively (220).

Dalton-Puffer’s proposed construct of these cognitive discourse functions will be the primary focus of this thesis.

3. Dalton-Puffer's construct of cognitive discourse functions

The following sections provide an overview of Dalton-Puffer's construct of cognitive discourse functions as well as the theoretical framework behind it, which the empirical study of this thesis is built on. However, for gaining a better insight into the whole theoretical framework behind Dalton-Puffer's proposal, it is advised to review her article 'A construct of cognitive discourse functions for conceptualizing content-language integration in CLIL and multilingual education' (2013) as well as respective literature referred to in the article.

3.1. Introducing the theoretical framework

In order to achieve the integrative aspect of CLIL with regard to content and language, Dalton-Puffer (2013: 220) suggests that a "possible common denominator" has to be found, leading her to look at "cognitive learning goals from the point of view of subject-specific education and curriculum theory as well as applied linguistics".

3.1.1. The subject-education perspective

The first approach Dalton-Puffer takes is the study of the "content-side of the operation", called the 'subject-education perspective' (220). As different curricula are being taken into consideration, Dalton-Puffer (221) points out the impact of cultural backgrounds as well as the variety of subjects which are being taught in a language other than each individual's first, resulting in heterogeneous and individual "styles and traditions of thinking" with regard to educational objectives and pedagogies. Taking this "notional plural" of settings and expected standards into consideration, Dalton-Puffer suggests that these diverse curricula refer to "concepts that are not completely alien to each other" (221).

Thereupon, she introduces the American educational psychologist Bloom et al.'s *Taxonomy of educational objectives* (1956), which was initially intended to serve as "an instrument for test design and curriculum development" within the context of the United States but eventually experienced worldwide awareness and use (221). Thereby, the cognitive domain was organized into six major categories of thinking skills, "Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation", which were then ordered hierarchically (Krathwohl 2002: 212).

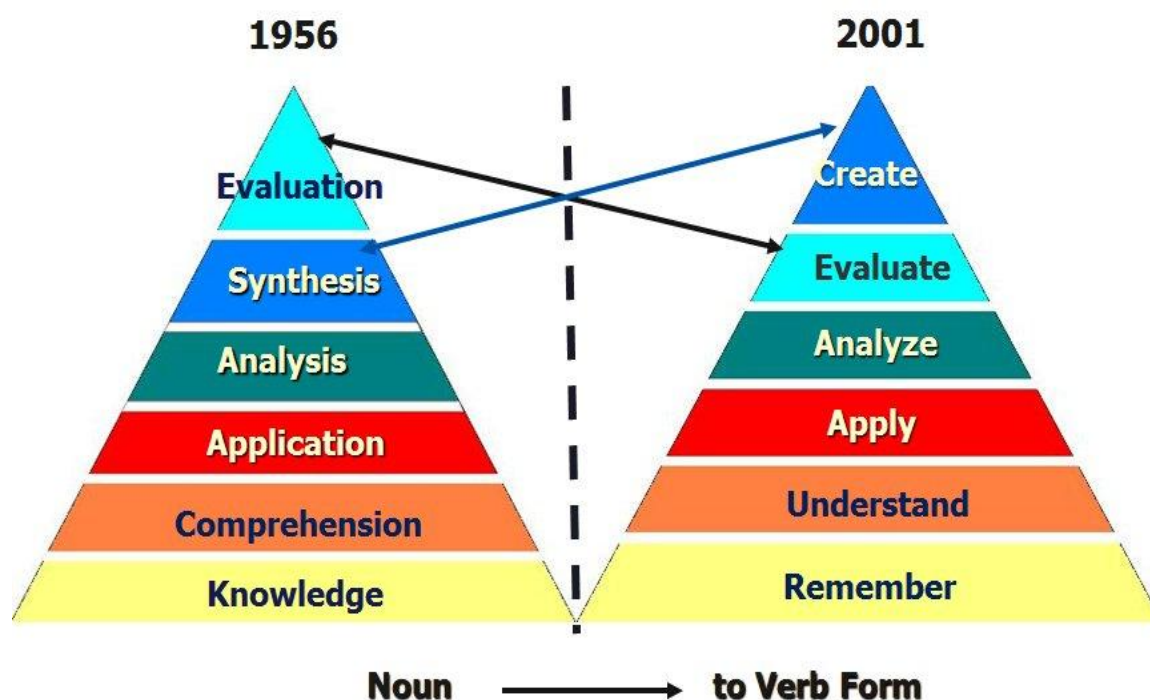


Figure 2 Bloom’s revised taxonomy (Wilson 2001)

As shown in Figure 1, the thinking skills are presented in form of a pyramid, implying that there is a hierarchical order, ranging from more simple to more complex forms of thinking (Wilson 2013). The revised taxonomy presents a modified version of Bloom’s taxonomy as the thinking skills which initially constituted nouns are now defined in form of verbs and the top two categories are repositioned.

However, Dalton-Puffer does not share Bloom et al.’s view of hierarchical order and prefers Anderson and Krathwohl’s (2001) revised version of the taxonomy, which “restructures the material into a two-dimensional space of knowledge dimensions and cognitive processes respectively”, as depicted in Table 1 (221). Wilson (2013) points out that with respect to Anderson and Krathwohl’s revised taxonomy, the most important modification does not concern the newly introduced verbal form or the relabeling and restructuring of its categories, but “lie[s] in the more useful and comprehensive additions of how the taxonomy intersects and acts upon different types and levels of knowledge — factual, conceptual, procedural and metacognitive” (original emphasis).

Table 1 Anderson and Krathwohl’s revised taxonomy of cognitive educational objectives (Anderson & Krathwohl et al. 2001; adapted)

KNOWLEDGE DIMENSIONS	COGNITIVE PROCESSES					
	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
Factual						
Conceptual						
Procedural						
Metacognitive						

As can be observed, the thinking skills in the revised taxonomy of cognitive educational objectives have changed from nouns to verbs while being displayed horizontally, implying that there is no hierarchical ranking of importance, a stance which is supported by Dalton-Puffer’s construct of discourse functions. When applying the knowledge dimension to the field of multilingual education, such as knowing vocabulary or being familiar with facts related to the subject, Dalton-Puffer (2013: 222) considers there to be a missing dimension, namely the “dimension of understanding and actively doing something with that knowledge”, which is mirrored in most of the above listed cognitive processes (cf. Table 1).

Dalton-Puffer suggests that Anderson et al.’s revised taxonomy needs to be further modified and juxtaposed with similar concepts which favor the European context, such as Biggs and Tang’s (2011[2008]: 91, quoted in 222) *SOLO* ‘Structure of the Observed Learning Outcome’ *taxonomy* of verbs for formulating learning outcomes. In this regard, Biggs and Tang classify and structure diverse mental processes vertically as well as horizontally according to their complexity and therefore level of competence and understanding, which is illustrated in a simplified version (cf. Table 2). Due to the simplified version of Biggs and Tang’s hierarchy of verbs, a direct comparison of the parallels and hierarchies becomes more straightforward.

identify name follow simple procedure	combine describe enumerate perform serial skills list	analyze apply argue compare/contrast criticize explain causes relate justify	create formulate generate hypothesize reflect theorize
UNISTRUCTURAL	MULTISTRUCTURAL	RELATIONAL	EXTENDED ABSTRACT

Figure 2 Verbs for formulating learning goals introduced by Biggs and Tang (Biggs & Tang 2008; simplified)

As displayed in Figure 2, the verbs (i.e. *identify*, *analyze*) represent “concrete linguistic behaviours by which students are expected to demonstrate their content knowledge” (Dalton-Puffer 2013: 223). These verbal expressions were also the center of focus in Bailey et al.’s (Bailey 2003, 2007; Bailey et al. 2002, 2007, quoted in 223) study which focused on finding a “framework for academic language proficiency” expected from students who attend high schools throughout the United States. Thereby, they base their main source of academic language requirements on curricular documents which provide insight into which criteria language students need to fulfill to meet the national or state standards. Findings show that “national and state curricula within the US show considerable variation in terms of how specific they are regarding their expectations of ways in which students are supposed to demonstrate their knowledge” (223). These expectations are expressed in the form of verbs describing action, such as “*compare, explain, identify, recognize*” (Bailey & Butler 2003: 16, quoted in 223; original emphasis). In addition, the American online educational program K-12 and its ESL curricula were analyzed with the result of an ever greater selection of verbs, including “*analyse, contrast, define, elaborate, hypothesize, justify*” (Bailey & Butler 2003: 17, quoted in 223; original emphasis).

In addition to the previously discussed taxonomies and Bailey et al.’s work, a project by the “Council of Europe’s *Languages of Schooling* platform” (223; original emphasis) called

‘Language(s) in other Subjects’ (c.f. Council of Europe) presents an important source for Dalton-Puffer’s construct and repertoire of cognitive discourse functions. The main objective of the project was for a team of language and subject teachers of multiple European countries to determine “language demands and communicative competences” (223) with regard to compulsory educational settings, taking European curricular documents as well as scientific papers into account. Thereby, speech events within and outside of the school context where subject specific knowledge was involved included verbs describing actions, so-called ‘academic discourse functions’ (223). Moreover, the study of standard based curricular documents which incorporate “learning goals or *competences*” (224; original emphasis) showed that subject curricula consider these learning goals to be specifically theirs, as they conduce to the subject’s main interests of, i.e. doing math.

Furthermore, Vollmer (2011; Thürmann & Vollmer 2013, quoted in 224), one of the project’s most involved team members, intended to expand the analytic study of curricular documents with regard to academic discourse functions to the German context, differentiating between macro functions and micro functions. After a close-up analysis of new curricula of each German state as well as classroom observations, Vollmer introduced a list of nine (later eight German) discourse functions, also labeled as macro-functions.

This list (c.f. Table 2), which is displayed below, is an attempt to organize some of the many micro functions and to assign them to the respective nine macro functions. However, one must consider that the micro functions are an open list and each micro function may be suitable for more than one macro function.

Table 2 Vollmer’s list of macro and micro functions (Vollmer 2010: 22-23; adapted; open list)

MACRO FUNCTIONS	MICRO FUNCTIONS
1. searching (<i>explorative function</i>)	questioning, asking questions, guessing
2. naming/pointing (<i>indexical function</i>)	identifying, selecting
3. describing (<i>referential function</i>)	classifying, labeling
4. narrating (<i>narrative function</i>)	reporting
5. explaining (<i>relating function</i>)	relating, summarizing
6. arguing (<i>argumentative function</i>)	contrasting
7. evaluating (<i>evaluative function</i>)	hypothesizing
8. negotiating (<i>interactive function</i>)	contrasting
9. creating (<i>creative function</i>)	predicting

Vollmer thereby points out that due to the high number and variety of discourse functions there are many different cognitive demands to be identified. On the one hand, some discourse functions can be considered to be rather “basic or comprehensive” as well as distinct with

regard to the diverse forms of discourse and cognitive process and actions (also called macro functions), whereas other discourse functions can be assigned to and serving more than one macro function (also called micro functions) (22). Although these micro functions “operate on a lower level than the macro discourse functions”, they still incorporate both cognitive and verbal actions simultaneously (23).

After considering the large amount of literature, Dalton-Puffer (2013: 224) concludes that a total of over fifty discourse functions can be “derived from the literature review”. Thereby, the list of discourse functions included a notably high “number of overlaps among sources (such as *evaluating & assessing* which is mentioned by nine sources)” (original emphasis), as well as countless idiosyncrasies caused by cultural and geographical differences (such as *listing* and *organizing*) (224).

3.1.2. The applied linguistic perspective

The second approach Dalton-Puffer takes is looking at cognitive learning goals from the perspective of applied linguistics, an academic field which does not only address issues concerning second language teaching but also the “role of language for school learning in general” (2013: 224). It is particularly important for students who have to face school curricular which are published in a foreign language, as it is the case for official language, such as “immigrants or language minority students across the world”, as well as immersion and CLIL students.

Furthermore, Snow (2010: 450) points out that middle and high school students who are exposed to language dealing with scientific topics or social studies, such as economics, are often perfectly capable of reading and pronouncing words and phrases correctly without comprehending their actual meaning. This phenomenon suggests that academic language, which is a common feature of scientific texts, “may be one source of the challenge” (450).

Although scholars use various terms describing academic language, such as “language of education” (Halliday 1993), “language of schooling” (Schleppegrell 2001: 431), “scientific language (Halliday 1993), and “academic English” (Bailey 2007; Scarcella 2003), academic language cannot be narrowed down to one definition as its features differ according to topic, subject, and mode (quoted in 450). The precise boundaries for defining academic language cannot be established as interpretations can fall “toward one end of a continuum (defined by formality of tone, complexity of content, and degree of impersonality of stance), with

informal, casual, conversational language at the other extreme” (450). However, there are numerous common features which help contrast academic with non-academic language, such as concise and precise language which shows a “high density of information-bearing words” while lacking in redundancy (450). Thereby, academic language and its features, such as “lexicon, syntax, and discourse” (Dalton-Puffer 2013: 225), are considered to be the key to second language students’ learning success and language proficiency, while literacy is seen as the “dominant concern in the area of academic language” (August & Shanahan 2006, quoted in 225).

In this regard, Jim Cummins’s binary construct of Basic Interpersonal Communication Skills (BICS) as well as Cognitive Academic Language Ability (CALP) represent a prominent theory in the European context, as Cummins discusses the “discrepancy between L2 students’ apparent proficiency in the language and their frequent lack of educational success” (225). In his paper ‘BICS and CALP: Clarifying the Distinction’, Cummins (1999) highlights the apparent differences between acquiring conversational language and academic language, which he also labels as BICS (Basic Interpersonal Communicative Skills) and CALP (Cognitive Academic Language Proficiency), respectively (1). In this regard, “BICS refers to conversational fluency in a language while CALP refers to students’ ability to understand and express, in both oral and written modes, concepts and ideas that are relevant to success in school” (Cummins 2008: 71). Furthermore, he argues that “not all aspects of language use or performance [...] [can] be incorporated into one dimension of global language proficiency (1999: 2), pointing out the misunderstanding of language acquisition which has led to bilingual students’ lack of academic success (3). Additionally, although Cummins claims that the acquisition of “CALP takes three to four times longer [...] than BICS” (Dalton-Puffer 2013: 225), he also stresses that BICS and CALP do not necessarily have to be acquired in order, arguing that “high levels of L2 CALP can precede attainment of fluent L2 BICS” nor are they necessarily separate (Cummins 1999: 3). When applying this theory on the context of CLIL, Dalton-Puffer (2013: 226) argues that some CLIL learners “may be expanding their CALP more quickly than their skills in everyday interpersonal communication”. Considering the factor, it is essential for the students to interact in face-to-face communications as it plays a crucial part of their proficiency in every-day language and thereby promoting social communication and discourse skills. Furthermore, Cummins (1999: 1) concludes that bilingual educational programs need to consider “(1) cognitive skills; (2) academic content; and (3) critical language awareness” in order to provide efficient and successful language acquisition among bilingual children. Moreover, Cummins (1992, quoted in Dalton-Puffer

2013: 226) points out that the concept of BICS and CALP became multidimensional while “occupying a space defined by degree of contextual embeddedness [sic] and cognitive demand of a speech event”. Following “‘degree of cognitive demand’ puts CALP in connection with notions of thinking skills”, which led to the reference of Cummins’s model for curricular purposes (226).

A second theory which is based on the same binary concept claims that written and oral language form a “continuum between two prototypical extremes”, such as ‘konzeptionelle Schriftlichkeit’ (in English *conceptual literacy*) and ‘konzeptionelle Mündlichkeit’ (in English *conceptual orality*) (Koch & Österreicher 1985, 2007, quoted in Dalton-Puffer 2013: 226-227). According to Koch and Österreicher, orality and literacy can be differentiated with regard to their conception and medium. In this case, the medium is defined as the form oral linguistic expressions can take and are realized (Koch & Österreicher 1994: 587), distinguishing between the oral phonic code and the written graphic code. In terms of the conception of literal expressions, the modality and characteristic style are being consulted (Schulcher 2010: 7), discriminating between ‘conceptionally oral’ and ‘conceptionally written’ conceptions (Koch & Österreicher 1985: 17, quoted in Pissarek 2011/2012: 3).

The following table will summarize the main definitions, including their explanations.

Table 3 Pissarek’s construct of conceptual orality and conceptual literacy (Pissarek 2011/2012: 3; adapted)

LANGUAGE	oral	written
medial	Language is spoken.	Language is written.
conceptual	PROXIMITY	DISTANCE
	The nature of spoken language underlies the conditions of oral language.	The nature of written language underlies the conditions of written language.
	PROXIMITY	DISTANCE

Koch and Österreicher consider the spontaneity or planning of a language to be the distinctive feature of linguistic proximity and distance, as planned language includes rather linguistically distant texts which include a high density of information whereas conceptually oral texts appear to be linguistically closer while not providing such high density of information as occurs in written language (Pissarek 2011/2012: 4). In conclusion, the main idea behind the Koch and Österreicher’s concept is that written language which is intentionally created for

oral purposes, such as a presentation, should not be performed as a written text by, i.e. reading the text, but rather underlies the conditions of an oral text, vice versa, as the conception of the language would be considered to be unnatural.

In addition to the study by Koch and Österreicher (1985), Bunch (2006, 2009) critically analyzed the theory of a “binary distinction between everyday-language and academic language” by studying a sequence of “interconnected classroom activities”, such as interactions among students during the preparation of oral presentations followed by the oral presentations as well as the final “ensuing teacher-led feedback discussion” (quoted in Dalton-Puffer 2013: 227). Bunch suggests that academic talk with regard to the subject as well as problem-solving can take two forms, introduces the remarkably interactive “unplanned exploratory talk”, which includes a high amount of informal language and is labeled as “*language of ideas*”, followed by the second form of talk, called “*language of display*”, which includes features of formal and planned language (quoted in Dalton-Puffer 2013: 227; original emphasis).

All these different studies point out the same objective of classroom interaction, namely to provide the students with an educational setting where teachers help them enhance their language skills and knowledge by “juxtaposing different oral and literate uses of language [...] [and] negotiating curricular content during lessons” (227). However, as this objective has mostly been solely an established theoretical notion, only little empirical evidence concerning the realization of this objective has yet been published. Dalton-Puffer therefore emphasizes Bailey and Butler’s (2003: 18, quoted in 227) cautionary statement, claiming that educational standards must not be referred to as the one and only “evidence for academic language requirements as these may reflect ideals for school reform ‘rather than being a source of evidence for what and how students are being taught’”. In order to overcome the lack of evidence, Dalton-Puffer proposes a new construct of so-called *cognitive discourse functions* (CDFs), which is based on curricular concepts as well as applied linguistics’ theories, intending to “produce coherent evidence regarding how students are taught and how they act in actual classroom lessons” (227).

3.2. The construct of cognitive discourse functions

After reviewing the aforementioned literature, Dalton-Puffer (2013) sees the necessity to organize and summarize the list of over fifty CDFs in a more structured and practical list (233), aiming at supporting “research and development on the integration of content and language pedagogies in all forms of multilingual education by making visible how disciplinary thought processes are handled in classroom talk” (232). Thereby, Dalton-Puffer describes her understanding of cognitive discourse functions in the educational context to be discourse patterns which emerged due to the need of teachers and students to reach their explicit and implicit learning goals as well as to meet curricular requirements by “building knowledge and making it intersubjectively accessible” for internalization (231). To summarize, cognitive discourse functions can be considered to be documentable and “observable analogs of thought processes [...], showing the students how rational/deliberate thought works and rehearsing them into it” (231).

According to Dalton-Puffer, her proposed construct suggests how to generally structure the discourse functions in a way which allows its nature to be transdisciplinary with regard to linguistics on the one hand and subject-specific perspective on the other hand, while fulfilling following criteria (232):

1. The construct should consider that many different subjects are addressed which show diverse conceptualizations of educational goals. Therefore, the construct needs to be flexible to a degree which allows it to reflect these conceptual distinctions.
2. As it aims at content and language integration, “the construct focuses on cognitive processes that have a fairly straightforward link to verbalization” (232), meaning that the thought processes, which are not necessarily the thought itself (231), are eventually linguistically expressed.
3. Therefore, pragmatics and its elements, such as communicative patterns, should be taken into consideration.
4. Furthermore, as the construct applies to various cultural models “which are contextually variable in their meanings” (232), it needs to “leave space for indeterminacy and ambiguities”.
5. In addition, the construct should face certain limitations in order for it to enable and allow storage in working memory, a facilitated operationalization as well as an improved usability as an approach to learn and discover more about classroom interaction with regard to cognitive discourse functions.

6. Lastly, it is necessary to provide “empirical evidence for each of the elements in classroom interaction” (233).

These criteria build the logic foundation of Dalton-Puffer’s construct and also provide guidelines for the use of the construct in the empirical context (232), which is the main focus of this thesis.

An attempt was made by her to find a solution which condenses the large number of functions while leaning on models proposed by other linguists, such as Mohan (1986: 83, quoted in 233), who suggests a concept called ‘knowledge framework’, introducing a “constrained three-part structure (*Classification – Principle – Evaluation*), which is, however, achieved at the cost of having an ‘everything else’ category in the middle” (original emphasis). Thereby, Mohan discusses so-called knowledge structures which are linked to classroom talk and “facilitate comprehension, memory and application” (Abelson & Black 1986, quoted in Mohan 1990: 8), classifying these knowledge structures into three pairs: (1) classification or concepts – description; (2) principles – temporal sequence; (3) evaluation or value – choice or decision making (Mohan 1990: 10). However, Dalton-Puffer claims that one needs to pay more attention to Mohan’s *principles*, which include knowledge procedures such as “*causation, inference, prediction, hypothesizing, generalizing*” instead of subcategorizing them into the three knowledge structures (2013: 233; original emphasis).

Furthermore, Dalton-Puffer (2013: 233) points out Zydatiś’s proposal of a three-part knowledge structure with regard to bilingual subject pedagogy. The three divisions are macro functions called “*describe – explain – evaluate*”, which constitute umbrella terms for all tasks as each assignment refers to one of the three macro functions (Zydatiś 2010: 136).

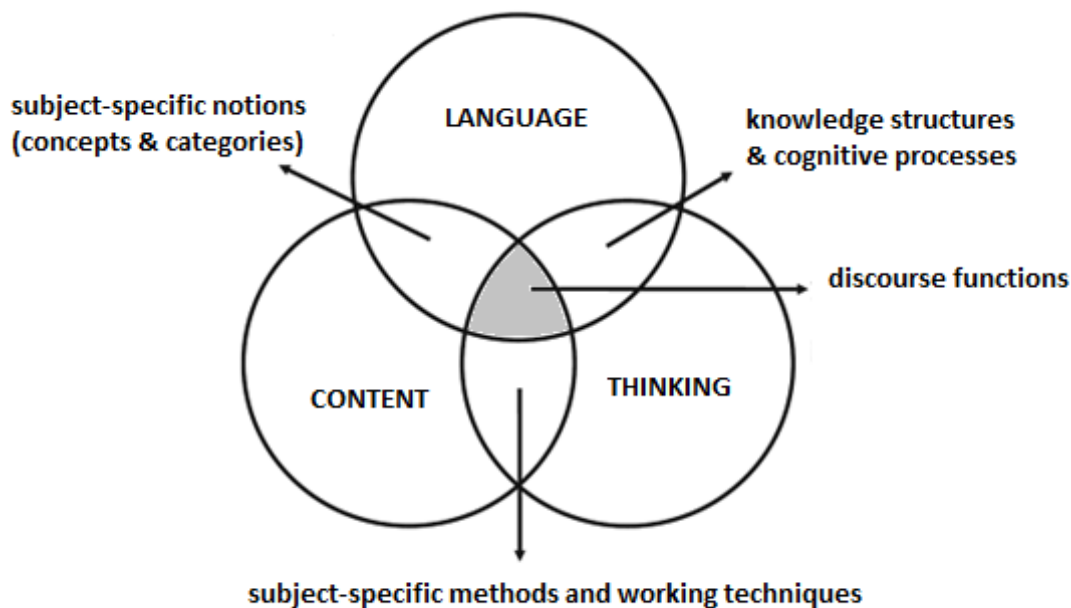


Figure 3 Zydatiſ’s model of interdependence of language, content and thinking (Zydatiſ 2010: 142; translated; adapted)

As can be seen in Figure 6, the highlighted interface of the three circles *content*, *thinking* and *language* constitutes academic discourse functions, which represent certain cognitive processes with regard to subject-academic discourse. Zydatiſ (2010: 143), however, claims that new empirical studies show that these academic discourse functions occur very rarely in subject classroom talk with regard to frequency and form, which calls for the need of an array of so-called micro genres, allowing students to express their knowledge as well as cognitive thinking processes.

It is this level of micro genres (such as naming, identifying, describing, justifying, defining, comparing, hypothesizing, predicting, prioritizing, evaluating, etc.) which Dalton-Puffer bases her construct of cognitive discourse functions on, arguing that “in order to understand how cognition gets verbalized in classroom interaction we need to take a perspective on classroom talk that encompasses both the students and the teacher” (2013: 233). Thereby, Dalton-Puffer argues that the cognitive discourse functions can be seen as verbal actions between students and teachers which reflect cognitive processes and “are necessary for dealing with *knowledge*” (233; original emphasis). Once Dalton-Puffer had successfully managed to formulate the main discourse functions which illustrate basic communicative intentions, the majority of functions from the vast aggregation which had been compiled began to “group around them” (233), leading to Dalton-Puffer’s proposal of

dividing all cognitive discourse functions into seven groups. However, Dalton-Puffer points out that some functions still “remain unaccounted for [...] [as] more [functions] are likely to emerge as one surveys more curricula in more contexts” (233-234).

The following figure depicts the construct of cognitive discourse functions and their subdivisions of seven elements (Type 1-7).

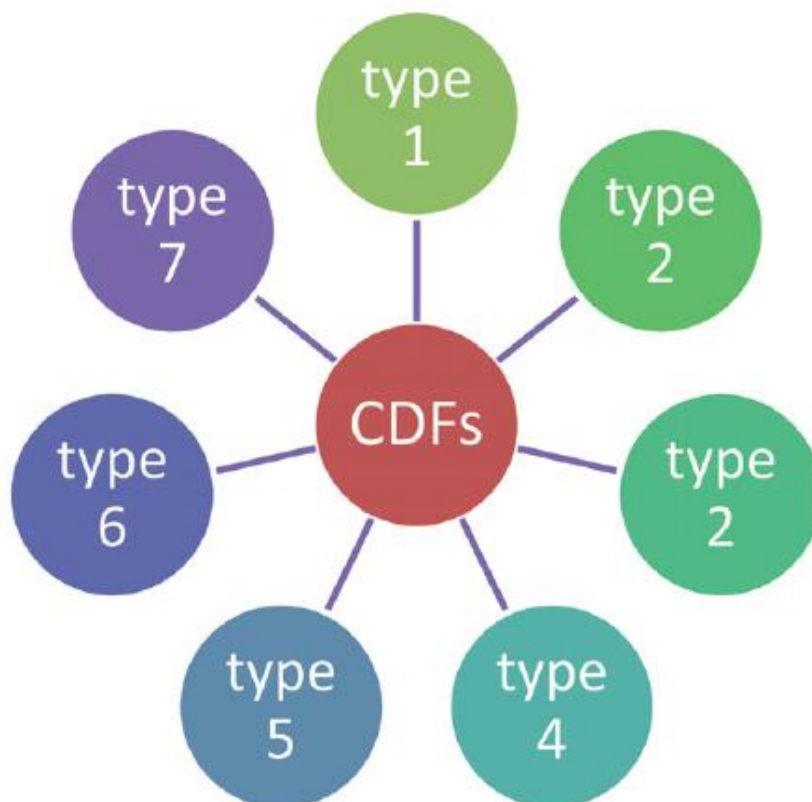


Figure 4 Dalton-Puffer’s construct of cognitive discourse functions (Dalton-Puffer 2013: 234)

The figure thereby purposely illustrates “abstract labels which are semantically opaque” (234) as each type consists of different proportion of actual realizations. Table 4 aims at providing more information on the content of each element, displaying its underlying “basic communicative intention which forms the core of the function” (234).

Table 4 Dalton-Puffer’s list of cognitive discourse function types and their communicative intentions (Dalton-Puffer 2013: 234; adapted)

FUNCTION TYPE	COMMUNICATIVE INTENTION	LABEL
Type 1	I tell you how we can cut up the world according to certain ideas.	<i>classify</i>
Type 2	I tell you about the extension of this object of specialist knowledge.	<i>define</i>
Type 3	I tell you details of what can be seen (also metaphorically).	<i>describe</i>
Type 4	I tell you what my position is vis a vis X.	<i>evaluate</i>
Type 5	I give you reason for and tell you cause/s of X.	<i>explain</i>
Type 6	I tell you something that is potential.	<i>explore</i>
Type 7	I tell you about something external to our immediate context on which I have a legitimate knowledge claim.	<i>report</i>

The third column illustrates a label which represents English lexemes, acting “as a quick-access to the function[s]” (235). Although Dalton-Puffer (235) sees a problem with using lexemes as discourse functions, she argues that they are in fact

normal words and therefore behave like all normal words do: their meanings are not unitary and stable but networks which are activated differently in different contexts [...]. That is to say, the labels of the CDFs do not form a terminology in the sense of being the names of unequivocally defined objects, as we have no direct evidence of the underlying cognitive activities or processes they purport to name; neither do we know whether these underlying activities are at all unitary or clearly distinct [...].

With this statement, Dalton-Puffer argues that one cannot mistaken cognitive discourse functions to be mere words but can constitute to be functions which can be realized in form of words, phrases, or even whole passages.

The following figure illustrates the seven main CDF types, which are not hierarchically ordered or shaped according to size and importance. All CDF types are considered equal in complexity and importance.

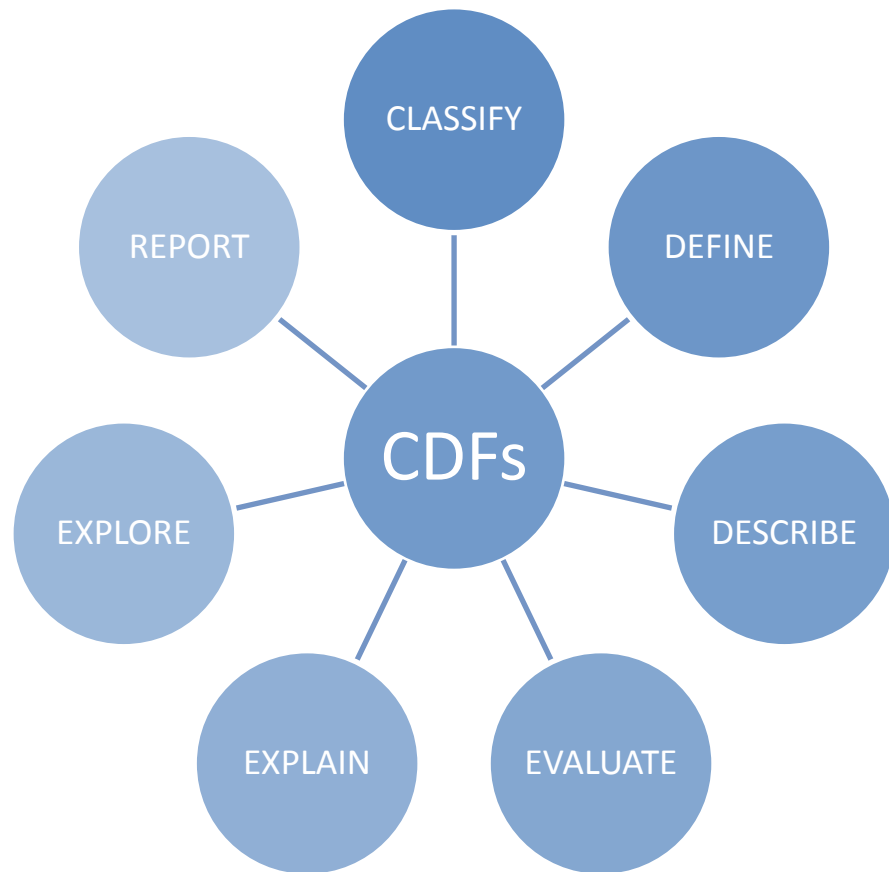


Figure 5 Main seven cognitive discourse function types

To sum up, the seven elements and their labels as depicted in Figure 5 are not definite terminologies but rather categories consisting of further functions. As shown in the following table which depicts members of each CDF category, the number of members varies significantly with each CDF category being yet considered to be equally. Dalton-Puffer thereby points out that *define*, for example, presents a considerably smaller category than *evaluate*. Referring to the previously discussed concept of macro- and micro-functions, Dalton-Puffer states that it is problematic to distinguish between them as there is a lack of a “clear demarcation line between them” (Dalton-Puffer 2013: 235). Therefore, Dalton-Puffer suggests following classification of functions, stressing that these categories are not unitary or definite in their terminology (235).

Table 5 Alphabetical list of CDF categories and their members (Dalton-Puffer 2013: 235; adapted)

CLASSIFY	classify, compare, contrast, match, structure, categorize, subsume, combine, label, organize, sequence
DEFINE	define, identify, characterize, recognize, label, name
DESCRIBE	describe, label, identify, name, specify, exemplify, generalize
EVALUATE	evaluate, judge, argue, justify, take a stance, critique, recommend, comment, reflect, appreciate, analyze, interpret, express opinion, position
EXPLAIN	explain, reason, express cause/effect, draw conclusions, deduce, argue, interpret
EXPLORE	explore, hypothesize, speculate, predict, guess, estimate, simulate, take other perspectives, inquire, request information, theorize
REPORT	report, inform, recount, narrate, summarize, relate, give information, list, retell, enumerate

I have added the words highlighted in red to Dalton-Puffer's list (c.f. Table 5) in order to stress the high number of members of each group. Even with these additions, the list of members must not be mistaken as a complete list that excludes further verbs. Furthermore, the members mentioned within ought to draw attention to overlaps within CDF categories, such as *label* or *interpret*.

According to Dalton-Puffer, there are two aspects one needs to consider when looking at the internal structure of the seven categories. Firstly, it parallels Rosch's (1975) prototype theory, which states that categories are represented by individual prototypes which describe the categories' features best, as some members of the category appear to "more central than others and also more like each other than other members" (Dalton-Puffer 2013: 236). However, Dalton-Puffer furthermore points out that one cannot identify the most suitable prototype of a category but should rather focus on the "prototypical communicative intention" (236) which resembles the core of the category. Furthermore, overlapping similarities and family resemblance (Wittgenstein 1953, quoted in 236) among micro functions of one category are not exceptional. In addition, despite the high chance of overlaps of semantic meanings of some type members, "the respective lexical labels may not be used in the same contexts, because they belong to specific communities of practice who use them to name activities that are considered typical or important in that community" (236). What D'Andrade describes as communities in that sense are social groups which share the same "cognitive schemas" and experience (1987: 112, quoted in 236), which when applied to the construct of CDFs can be related to "subject experts and subject-educators belonging to a specific discourse community" (236).

To summarize, due to the complex internal structure of the seven function types, their borders appear somewhat fuzzy and imprecise. On the one hand, the seven types "do not

necessarily exclude each other”, whereas on the other hand, they even “frequently *include* each other” (Dalton-Puffer 2016: 5; original emphasis). As an example, Dalton-Puffer (2013: 236; original emphasis) points out that

[c]lassifying is always part of DEFINE, but not *all* instances of CLASSIFY are. Describing may be involved in EXPLAIN or REPORT – and to a small extent even in DEFINE – but there will also be instances of DESCRIBE which are neither of the three but something in their own right.

In order to learn more about the internal structure of each cognitive discourse function type as well as to enhance one’s understanding of which forms the fuzzy characteristics of the construct can take in practice, one needs to empirically research the construct in the context of actual classroom talk. As only little empirical research has been conducted over the last few years, the study in this thesis aims at providing more information and better insights into how the construct is practiced in the specific context of Austrian CLIL Economics lessons.

3.3. The seven CDF types as reflected in the Austrian economics curriculum

The following section aims at providing an overview of each CDF type and their respective definitions according to assorted literature which is relevant to this particular study. Furthermore, the curriculum of the Austrian upper secondary school type ‘Handelsakademie’ (HAK) will be summarized and analyzed according to each function type with regard to their occurrences and given importance in the subjects of English, including Business English, as well as Business Administration (in German *Betriebswirtschaftslehre*) and Economics (in German *Volkswirtschaftslehre*). Thereby, the function types are presented in alphabetical order as proposed by Dalton-Puffer and do not appear in any form of ranking with regard to their relevance.

The Austrian school type HAK (Handelsakademie), is a public five-year upper-secondary vocational training school with a focus on economics. As the school type differs significantly from regularly secondary schools, it follows its own curriculum which was last reformed in 2004. Thereby, the curriculum proposes so-called ‘Kompetenzen’ (in English *competences* or *skills*) for each grade and subject, providing a guideline for all teachers which knowledge and skills the students should acquire. In addition to these requirements, the curriculum lists a number of topics and skills related to these topics in form of chapters based on each subject taught by the school. Considering that each school provides extra-curricular classes for students to choose on top of the required classes, following subjects are currently

taught in HAKs: Religion, German, **English (including Business English)**, Foreign Language (French, Italian, etc.), Economic and Social History, Geography (including Economic Geography), International Economic and Cultural Regions, Chemistry, Physics, Biology, Math, **Business Administration**, Social Competence and Personality Training, Business Training and Project/Quality Management and Case Study, Accounting and Controlling, Business Informatics, Information and Office Management, Political Education and Law, **Economics**, PE (BMBF 2004: 1). The subjects highlighted in bold are selected and considered to be relevant to this study as they represent this study's focus on Austrian CLIL Economics lessons. Thereby, Economics serves as a rather broad term, including Business Administration, Marketing, Micro and Macro Economics, as well as Tourism Management. The subject **English** is taught throughout all five school years and aims at providing the student with common language skills, including IT-related skills, as well as competences to successfully communicate in the future professional life in the business sector (2004: 14). **Business Administration** (in German *Betriebswirtschaftslehre*) is also a mandatory class throughout the five school years, focusing on the students' acquisition of skills related to working within and managing a company and its employees, including the ability to think economically and to understand the structure and dynamics of a business (2004: 32). **Economics** (in German *Volkswirtschaftslehre*), on the other hand, is only taught in fifth grade and deals within the global context, teaching the students how the world is economically connected and which factors influence the dynamics of the global economy and trade. Moreover, the students learn their role in the global market and how it is historically, culturally and socially dependent (2004: 49).

CLASSIFY

Pointing out the importance of knowledge of classifying with regard to “developing expertise” in a specific field, Dalton-Puffer (2016: 5) describes **classifying** to be the “key candidate for a cognitive discourse function”, as it represents a cognitive activity which is the core element of general knowledge construction. Mohan (1986) as well assigns classification a central role in his construct of knowledge framework which consists of the three elements: classification, principles and evaluation.

According to Krathwohl and Anderson (2001: 49, quoted in Dalton-Puffer 2016.: 5), there are two aspects of classifying: the static and the dynamic side. Thereby, they define the

static aspect as “knowing about the categories and classifications of a subject area” (knowledge structure) whereas the dynamic side deals with discovering new elements and being able to classify them accordingly to adequate categories (thinking process). These two aspects of classifying are also reflected in Mohan’s study on language and content (1986, quoted in Dalton-Puffer 2016: 5), which proposes that “it is both a knowledge structure and a thinking process by which one can arrive at such knowledge structures or work with them”.

Krathwohl (2002: 215) suggests within his revised taxonomy that classifying is a subcategory of understanding. When discussing the knowledge dimensions, he assigns “Knowledge of classifications and categories” to one of four main categories called “Conceptual Knowledge”, describing it to be “[t]he interrelationships among the basic elements within a larger structure that enable them to function together” (214).

Looking at the curriculum, one finds many occurrences of the cognitive learning goal of ‘verstehen’ (in English *understanding*) in the context of comprehending contents of abstract texts (BMBF 2004: 14), the foreign language’s cultural background (2004: 14) and processes within a company (2004: 32). In addition, the students are expected to be able to classify the new information according to the respective field. On top of to the previously mentioned dynamic process of classifying new information, the curriculum also includes the learning goal of being knowledgeable of categories and classifications with regard to language structures in terms of grammar (2004: 15) in the subject English and economic structures (2004: 49) in the subject Economics. Lastly, being able to create mindmaps, in German “*Mindmapping*” (2004: 15), seems to be a very prominent cognitive learning process, which requires students to structure, match, and contrast individual thoughts into categories.

DEFINE

Classifying and defining can be considered to be very similar discourse functions as they both concentrate on structuring knowledge. Once knowledge is created, it needs to be organized, “as all academic disciplines require definition for the proper identification of their subject” (Dalton-Puffer 2016: 7). This form of identification plays a crucial role in defining the field’s characteristics, including the knowledge objects’ features and relations to each other. Thereby, in order to define an object, one needs to assort it to a category by expressing some sort of “class membership” (7).

Although define is neither mentioned in Bloom's original taxonomy, nor in its revised version, Dalton-Puffer (7) describes definitions to be the "best-described academic function" due to various reasons. Firstly, they are said to be of great importance "as tools in the study of cognitive development", and secondly they are seen as greatly important for academic writing (7). Lastly, compared to other rather vaguely structured cognitive discourse functions, defining is considered as "a fairly compact affair", which makes their description less demanding.

In this thesis, the focus is less on definitions with regard to academic writing than on spoken classroom interactions, which involves "less compact realizations" such as one-sentence statements. Thereby, definitions often include the object's main characteristics, synonyms, and antonyms as well as its rank within a classification in form of a genus (i.e. a dog is an animal).

Analyzing the curriculum, one can conclude that some subjects besides English, Business Administration (BWL), and Economics (VWL) specifically state the two discourse functions **defining** and **identifying**, however, they occur very rarely, i.e. "Begriffe definieren" (BMBF 2004: 12) meaning the definition of specific terminology in the subject German, "Definitionen" (in English *definitions*) with regard to project management (50), and "organisatorische Strukturen in Netzwerken identifizieren können" (in English *identifying organizational structures within a network*) in the subject Business Informatics (44) . However, as the main focus lies on the three aforementioned subjects the analysis shows poor results with regard to the frequency of definitions, signaling that the cognitive process of defining is not considered to be playing a role in the curriculum.

DESCRIBE

Dalton-Puffer (2016: 8) explains DESCRIBE in the context of classroom interaction to be an activity which involves a speaker informing a listener about the external and internal qualities and characteristics of "a given object, entity, person, situation, event or process" in the position of a third person. As the main focus of this thesis lies in the interactional aspect of speech acts, the speaker's principal intention is to **inform** the addressee and to tell them what the speaker knows and sees (Gaulmyn 1986: 125; Lackner 2012: 49, quoted in 8).

Although the cognitive process of describing does not play a part in Bloom's Taxonomy, Dalton-Puffer argues that the function is still seen as "a key element in academic thinking

skills, thinking processes, academic language, [and] academic discourse functions” in terms of countless secondary literature (8). However, as CLIL involves subjects ranging from humanities to science, descriptions vary significantly according to each discipline. According to Trimble (1985, quoted in 8), descriptions are mostly predominant in scientific and technical subject. When comparing Trimble’s argument to Kröss’ (2014) main findings, one can see that descriptions constitute the largest represented CDF group in Kröss’ study of the use of CDFs in Austrian CLIL Physics lessons. Trimble (1985, quoted in 8) differentiates descriptions into three categories:

- 1) PHYSICAL description: What are its external characteristics and material?
- 2) FUNCTIONAL description: How does it function and what is its purpose?
- 3) PROCESS description: What steps does it follow and what are its procedures?

Thereby, physical description often refers to shapes, sizes, color, weight, texture, and many more characteristics. Functional and process descriptions, on the other hand, “require the author to state relations between parts and/or a ‘time order frame structure’” (Widdowson 1983: 59, quoted in 8). Considering functional descriptions to be part of explanations or even as part of definitions, Ehlich and Rehbein (1986: 87, quoted in 8) argue that this form of description may even be associated with explanations as they both involve the factor of relation.

With respect to the whole HAK curriculum, including all subjects in addition to the English, Business Administration, and Economics, the cognitive process of describing is mentioned quite frequently in form of “beschreiben” (in English *describe*), i.e. “Beschreiben von Texten” (in English *describing literary texts*) in the subject German (BMBF 2004: 10). However, there were no occurrences to be found in the three subjects, whereas subjects such as German, Math, Chemistry, Physics, etc. show a great focus on the learners’ ability to describe characteristics, processes, facts, texts, goals, formulas, models, statistics and much more.

EVALUATE

Evaluating, which includes synonyms such as “*appraise, argue [a point], assess, bring evidence/reasons, check, critique, contend, corroborate, debate, defend, evaluate, judge, justify, take a stance*” (Dalton-Puffer 2016: 10) and describes the determination of a subject’s value as well as the estimation of its force “in terms of something already known” (OED,

quoted 10). Furthermore, according to a wide range of sources dealing with thinking skills and academic language (11), evaluate is considered to be a complex and quite important discourse function. Mohan (1986) even grants this particular academic language function “[a]n extra-prominent position” by including it in his three-part construct of knowledge framework comprising classification – principles – evaluation (quoted in 11). With respect to communicative speech acts in the classroom, speakers would express their personal stance towards an issue, basing their reasons on evidence which can be easily provided and refer to “previous knowledge and values” (quoted in 10).

As parts of the data for this study is in German, one needs to be aware of possible “translingual confusions” (10), as, for example, the German word *interpretieren* does not equal the English *interpret*. According to Dalton-Puffer (2016: 10-11; original emphasis), the same applies to the German word *argumentieren*, which cannot be related to the English *argue*, as *argumentieren*

implies the bringing forward of reasons or evidence in order to affirm one’s position and a sense of having to convince and win over an opposition, thus *argumentieren* in a classroom context would mean conducting a discussion or actually a debate where different, often contrary positions have to be argued.

Argumentieren is expressed by Grundler (2010, quoted in 11) to be a considerably valued classroom activity in the context of German social science classes, including subjects of the economical field.

The curricular analysis does not show any occurrences of **evaluieren** (in English *evaluate*), but a high frequency of the word family of ‘argumentieren’ (in English *argue a point*), ‘Stellung nehmen’ (in English *taking stance*) and ‘beurteilen’ (in English *judging*) within the context of the whole curriculum, including all subjects. Looking at English, Business Administration, and Economics in particular, one can only find one occurrence of ‘argumentieren’ in form of “Argumentation and Darstellung von komplexen Sachverhalten” (in English *arguing about and illustrating complex issues*) and ‘beurteilen’ (BMBF 2004: 16, 49). Therefore, one can assume that this discourse function is highly valued and prominent in classroom talk.

EXPLAIN

As mentioned previously, the construct still faces the issue of displaying fuzzy characteristics with regard to its categories. Explaining is considered to be one of the categories which lack of clarity and is therefore highly complex and extensive (Krathwohl 2002: 215), and is discussed by a wide range of literature, “something which is not the case with other elements in the construct” (Dalton-Puffer 2016: 12). With respect to the revised taxonomy, Mayer (2002: 229) describes explaining to occur “when a student mentally constructs and uses a cause-and-effect model of a system or series”.

As there is a large amount of relevant sources, it also leads to complications as definitions and information varies from source to source, resulting in inconsistencies (Dalton-Puffer 2016: 12). Therefore, Dalton-Puffer (12) proposes her understanding of the verb **explain** by referring to following three definitions:

Table 6 Definition of *explain* according to Dalton-Puffer (2016: 12; adapted)

Explain 1	• To make something plain or intelligible • To clear of any obscurity or difficulty • To give details of or to unfold a matter
Explain 2	• To give an account of one's intentions or move
Explain 3	• To clarify the cause, origin, or reason of something

Dalton-Puffer points out that the first definition of explaining (Explain 1) can be seen as a synonym of “exposition” with exposition being used in formal and written contexts whereas explanation is related to informality and orality (13). However, Dalton-Puffer claims that Explain 1 is too comprehensive and detailed for it “to be of use in this construct” (13). Furthermore, when looking at Explain 2, it becomes more obvious that Explain 1 expresses “intentions, reasons and motives and so implicate[s] some kind of causality (‘x happened, because soandso [sic] was drunk’)” (13).

Overall, the understanding of explaining adopted by Dalton-Puffer for her construct relates to Krathwohl et al.’s taxonomy of thinking skills, which classifies explaining as a subcategory of the cognitive process of understanding. She furthermore argues that the basic communicative intention of this cognitive discourse function could be formulated as following: “I will give you reasons and tell you the cause/s of X” (13).

When looking at the three selected subjects of the HAK curriculum one notices that explaining is only mentioned in the context of Business English, where the learning goal is to explain a product and its functions (“ein Produkt und seine Funktionen zu präsentieren und zu erklären”) (BMBF 2004: 14), which would equal Dalton-Puffer’s proposed ‘Explain 1’. The discourse function is, however, often mentioned throughout the part of the curriculum which is not under investigation, such as “Schreibung und Erklärung häufiger Fremdwörter” (in English *writing and explaining frequently occurring foreign words*) (2004: 10).

EXPLORE

Although exploring appears to be a rather technical term at first, Dalton-Puffer argues that with respect to the CDF construct the meaning of the function is more general than proposed by dictionaries, such as the Oxford English Dictionary, which defines explore “to state a proposition merely as a basis for reasoning or argument that is, without conclusive evidence” (OED, quoted in Dalton-Puffer 2016: 14). However, the OED suggests synonyms such as “*assume, suppose, presume; conjecture; [...] [predict] and guess*” (14; original emphasis), which are less technical and share the common feature of discussing a matter which has not been confirmed neither in the past nor present. Thereby, the communicative intention of this function category could be described as following: “I’m talking about something which is not in the here and now, and which is not past fact either. I do not have conclusive evidence for what I say but it can serve me/us as a basis for further reasoning.” (14).

In order to be able to work with the function in more general terms, Dalton-Puffer suggests to consider the meaning of **hypothesize**, which, according to the OED, is “to state a proposition without conclusive evidence (usually in the interest of laying a basis for further reasoning or argument)” (14). Suggested synonyms for this functions and therefore members of the category are “*assume, suppose, presume; conjecture; predict, guess, speculate, explore, generate*” (14; original emphasis), which are rather non-technical terms. Considering these part-synonymous labels, Dalton-Puffer defines hypothesize as an activity which involves the “assumption or prediction about what something will be like or would be like if certain conditions are met”, while acknowledging prior established facts without considering them as unambiguous.

With respect to Krathwohl’s (2002: 215) revised taxonomy, hypothesizing would fall into the category of creating, that is to say it is not conceptual knowledge itself but rather

based on it. Hypothesizing and thereby exploring is not mentioned directly but seen in terms of “generating”.

Interestingly, although hypothesizing and exploring are considered as “as an integral part of knowledge building in educational contexts” (Dalton-Puffer 2016: 14) neither this particular cognitive discourse function nor its many synonyms, such as ‘erforschen’, ‘erkunden’, ‘ausfindig machen’, ‘raten’, ‘spekulieren’, etc., are present at all in the HAK curriculum with the only exception of ‘abschätzen’ (in English *estimate*), which is mentioned in the context of estimating the necessity of regional planning in the subject Geography (BMBF 2004: 23) as well as estimating magnitudes in Physics (2004: 27) and possible results in Mathematics (30).

REPORT

Report is seen as the “informative function” of the CDF family as its main purpose is to inform or tell someone about a matter, answering the following questions: “what happened, when, who did it and to whom, and under what circumstances” (Dalton-Puffer 2016: 15). With respect to the synonyms of reporting which were proposed by both the OED and Merriam Webster, namely “*recount, relate, narrate, present, summarize, [and] give account of*” (15; original emphasis), Dalton-Puffer (16) points out that although these synonyms do not necessarily have the same semantic meaning, as they may vary in “conditions of use, register and/or connotation”, there are yet three common features they all share:

- 1) The illocutionary function is to inform someone.
- 2) They assume that both the informer and the recipient share reduced knowledge with regard to the matter.
- 3) Referential language, and therefore functions of language where the communication of information is of main interest, is paramount.

After consulting some literature on academic language, Dalton-Puffer (2016: 16) noted that *presenting, narrating, and summarizing* were frequently mentioned. In respect to this particular study, narrating, which differs to reporting “in terms of the point of view of the teller vis a vis [sic] the events or facts related by him/her” and is therefore less objective than reporting, is considered to play a minor role compared to presenting or summarizing (16). According to Dalton-Puffer, *summarizing* can be described as cognitive process which involves the selection of information which appears to the speaker or writer to be the most

essential and is therefore “part of all the activities that form this particular complex of discourse functions” (16).

When considering oral classroom talk and the use of cognitive discourse functions, reporting can be observed in two forms. First, reporting often occurs in the context of “dialogic teaching” when students report their own findings to the class and thereby initiate a subsequent dialogue (Wells 2009, quoted in 16). Secondly, reporting in oral form can be “extended oral presentations”, a pedagogical task which is widely favored and common in Austrian schools (Bunch 2009, quoted in 16).

With respect to the subject English and Business English in the HAK curriculum, it is interesting to observe that report is a highly frequently mentioned discourse function in form of ‘berichten’ (in English *reporting*), ‘präsentieren’ (in English *presenting*), ‘zusammenfassen’ (in English *summarizing*), ‘wiedergeben’ (in English *repeating*) (2004: 14-15). Furthermore, synonyms such as *present* and *summarize* occur significantly often throughout all three subjects as well as the rest of the curriculum. When comparing the results of this particular discourse function category to the previously discussed functions, one can see that **report** is quantitatively the strongest represented discourse function of them all, which confirms Bunch’s (2009) claim that oral presentations and summarizations are very popular tasks within the school context.

Taking all seven cognitive discourse functions and their “complex internal structure” into consideration, Dalton-Puffer points out the problematic issue of the categories’ “fuzzy borders”, as they are not necessarily restricted to their own group but can in fact be quite “inclusive of each other” (2013: 236). Thereby, classify can always be considered to be part of define, however, not vice versa as not all instances of define are classifying. Moreover, the borders of defining, explaining, and reporting are unclear as a person explaining or reporting a matter might in some cases include a description to some extent, if not even a definition of the respective subject in focus.

As this construct requires more empirical grounding in order to eliminate these fuzzy borders and in order to learn more about the use of cognitive discourse functions in Austrian CLIL economics classrooms, this thesis will undertake a study of six lessons and analyze them with respect to the previously introduced seven discourse function types.

The following section will provide an overview concerning the specific research questions, the data, the method of analysis as well as the coding scheme.

3.4. Summary of previous studies dealing with CDFs in the Austrian school context

This section introduces two previous academic papers written by Kröss (2014) as well as Hofmann and Hopf (2015), who studied the use and application of cognitive discourse functions in Austrian Physics and Biology lessons respectively.

Kröss (2014) published a diploma thesis dealing with the use of CDFs in upper secondary CLIL Physics lessons by analyzing six lessons in terms of the use and frequency of the seven CDF types, as well as the respective realizers (teacher, student, teacher-student) and the context the CDF passages occurred in. Her main findings show that Dalton-Puffer's proposed seven CDF types are unevenly distributed (2014: 95), with DESCRIBE being the predominant CDF type with more than one fourth of all CDF realizations, whereas CLASSIFY and EVALUATE occur very seldom (2014: 46). Furthermore, the results revealed that the highest proportion of CDF passages was realized in form of a teacher-student interaction (59%), whereas only six percent of CDF occurrences were performed by students, indicating a severe lack in student participation (2014: 52).

Similar findings were reported by Hofmann and Hopf (2015), who investigated CDFs in two Austrian upper-secondary CLIL Biology classes in form of a quantitative and qualitative analysis (2015: 218). In the context of their study, eight lessons were videotaped, recorded, and subsequently analyzed, revealing that "CDFs are indeed regularly represented in the CLIL Biology classroom" (218). In contrast to Kröss' results with regard to the realizer, the teacher was found to be the dominant performer of CDFs (67%), whereas only one fourth (26%) of all occurrences were realized in form of a teacher-student interaction. However, both theses share the finding that students are significantly underrepresented as CDF producers, amounting to only seven percent in the scope of Hofmann and Hopf's study (2015: 89). Moreover, both studies correlate with regard to DESCRIBE being most frequently and EVALUATE and CLASSIFY the least frequently realized CDF types.

Both investigations aimed at providing empirical data to support Dalton-Puffer's concept of CDFs as well as her argument concerning the relevance of her proposed CDFs in the CLIL classroom. As Dalton-Puffer's concept still requires further empirical grounding with respect to its application in the context of several different CLIL subjects, this thesis aims at providing data about the use of CDFs in the Austrian CLIL Economics classroom.

4. Study design

As mentioned in previous sections, little empirical research on this subject matter has been conducted so far. Within the last two years after Dalton-Puffer's article "A construct of cognitive discourse functions for conceptualizing content-language integration in CLIL and multilingual education" has been published, a number of theses have contributed empirical findings concerning the cognitive discourse functions with respect to CLIL subjects such as Physics (Kröss 2014) and Biology (Hofmann & Hopf 2015). However, as suggested by Dalton-Puffer (2013: 241), more empirical research needs to be conducted in order to support her construct and to provide better insight into its dynamics within the construct.

4.1. Research questions

The aim of this thesis is to broaden the pool of information by gathering more empirical findings in the field of a subject, which has not been researched yet: **Economics**. Hereby, this thesis serves as an attempt to answer the question of how the construct is practiced in the specific context of Austrian upper secondary CLIL Economics lessons.

In order to answer this rather general question, the following sub-questions shall provide information on a more specific account:

RQ1: Which CDF types are realized in the data and how often do they occur?

RQ2: Who realizes them?

RQ3: How are the cognitive discourse functions interactionally realized?

By answering these questions, the findings are expected to help draw conclusions of how cognitive discourse functions are used in Austrian CLIL Economics lessons as well as suggest pedagogical implications for the application of Dalton-Puffer's construct in this context.

4.2. Method of analysis

In order to answer the research questions concerning the frequency and realization of the cognitive discourse functions, a qualitative data analysis of the aforementioned six CLIL lessons was carried out. The decision of choosing six lessons as the database for this study was made with respect to Dörnyei's (2007: 127) suggestion of working with an initial sample size of six to ten cases, arguing that "a well-designed qualitative study usually requires a relatively small number of respondents [, or in this case lessons,] to yield the saturated and rich data that is needed to understand even subtle meanings in the phenomenon under focus". The qualitative analysis approach taken in this thesis is based on the non-numerical database as well as the fact that the results are analyzed primarily by means of non-statistical methods (Dörnyei 2007: 24). However, in order to answer the first research question as well as to examine correlations between variables a quantitative approach was indispensable. Therefore, a mixed methods analysis (24) was considered to be the most effective procedure for achieving significant and informative results.

As the data used in this study has already been collected and audio-recorded by Dalton-Puffer for other purposes, they needed to be revised and adapted in terms of consistency in transcription conventions. Thereby, the VOICE (Vienna Oxford International Corpus of English) Transcription Conventions [2.1]: mark-up conventions (2007) was consulted with respect to providing homogeneous transcription standards. Although all six lessons had already been transcribed, supportive audio-taped data were available for only four lessons (L3, L4, L5, L6). The revised transcriptions of the six CLIL lessons were subsequently coded. Considering the fact that the codes with respect to the seven functions types are rather arbitrary and might be open to the interpretation of the analyst, it became indisputable that a framework for analysis had to be developed in order to improve the validity of the coding process of this study. The framework will be discussed in more detail in section 4.4. During the coding process, the data was coded with regard to two main coding categories: 1) the seven cognitive discourse function types as well as their respective sub-codes (i.e. German or embedded CDFs) and 2) the realizer of the CDF. Thereby, a passage which was coded according to a function type was furthermore assigned to a realizer, resulting in every coded section to comprise of two variables. Lastly, a memo was kept in order to note striking aspects of selected CDF passages in terms of their realization, language form and meaning.

4.3. Data overview

The database used in this study was audio taped and transcribed by Christiane Dalton-Puffer in the years 2002 and 2003. It was carefully selected in terms of variety of teacher types as well as subjects which serve as well-balanced representatives of the overall subject field of Economics. The respective database comprises six CLIL Economics lessons which were taught by three different teachers of the same upper secondary Viennese commercial academy. In the Austrian context, a commercial academy, also known as ‘Handelsakademie’ (HAK), is a form of an upper secondary vocational school whose main focus lies in the commercial and business apprenticeship of their students but providing students also with university entrance qualifications. The period of education amounts to five school years, providing an ideal context for content and language integrated learning with regard to teaching subjects of the field of Economics in the English language.

With respect to this thesis, ‘Economics’ serves as a rather broad term, as not all lessons were recorded in a subject specifically labeled as ‘Economics’ since the school itself has a focus on Business Administration and Economics, offering a great variety of subjects which deal with particular aspects of Economics. Thereby, the data for this study was recorded in three different subjects: International Marketing (IM), Tourism Management (TM), and a subject which is rather a blend of Business Administration and Macroeconomics (BM).

All the relevant information concerning the selection of subjects and teachers as well as a brief description of each lesson will be discussed in this section. In order to maintain the involved teachers’ names private and anonymous, they are labeled with the alphabetical letters A, B, and C.

The following table will display the different subjects, their labels as well as the teachers’ background information, displaying whether they are trained EFL teachers or simply subject teachers.

Table 7 Overview of each subject and the teachers

Subject	Subject code	Number of lessons	Teacher training
International Marketing	IM	2	Teacher A Non-EFL teacher trained business educator German native speaker
Tourism Management	TM	2	Teacher B trained EFL& Economics teacher German native speaker

Business Administration and Macroeconomics	BM	2	Teacher C Non-EFL teacher German native speaker trained business educator with language and work experiences in an international corporation
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As one can read from Table 7, there are a total of three teachers of which two are solely subject teachers, labeled as ‘Non-EFL’ teachers, as they received no formal training in teaching English as a foreign language. That is due to the fact, that there are no formal requirements in Austria to become CLIL teachers as long as teachers are fully qualified in their respective subjects. Although Teacher C is labeled as a Non-EFL teacher and did not undergo the same teacher training as Teacher B, Teacher C still shows experience with the use of the English language in the professional and pedagogical context, as she is a former employee of an international corporation and a certified business educator. Furthermore, in one lesson of Business Administration and Macroeconomics Teacher C is accompanied by a teach teacher (TT), who is an English native speaker and serves as a language assistant to the class teacher. In the context of Content and Language Integrated Learning in Europe, a considerably increasing number of schools have implemented team teaching with respect to providing language assistance to nonnative speaking CLIL teachers, as studies revealed “that this innovative educational paradigm has the potential to positively affect not only the classroom, but also the entire school community”, as language assistance benefits the enhancement of pronunciation, provides more authenticity and encourages English language output with respect to both nonnative teacher and students (Hibler 2010).

In order to provide a better overview of the database, lesson codes were assigned to each lesson, along with further detailed information concerning the grade, students’ age, and topic. These lesson codes along with the lessons’ information with regard to teacher, students’ age and topic are displayed in Table 8.

Table 8 Overview of lesson codes and information concerning participants and topics

Lesson code	Subject	Teacher	Grade	Age	Topic
L1	IM	Teacher A	11th	16-17	The class reviews homework about the product life cycle and its four stages: introduction phase, growth phase, maturity phase, and decline phase. Thereby, they explore potential promotional activities, pricing policies, and innovators. Furthermore, the lesson includes the discussion of the Boston Matrix.
L2	IM	Teacher A	11th	16-17	The students present their projects on particular products, such as toothpastes. Thereby, they talk about advertisement, placement in shops, and pricing policies. They discuss the Boston Matrix as well as features of a questionnaire, such as the difference between structured and unstructured questions as well as advantages and disadvantages. Furthermore, the teacher introduces the Ansoff Matrix.
L3	TM	Teacher B	11th	16-17	The lesson consists of three student presentations about tourism in Austria with regard to Chinese, Russian, and German tourists. Thereby, they discuss travel restrictions, statistics, advertisement, etc. Two of the three presentations are held in German.
L4	TM	Teacher B	11th	16-17	The teacher and the students discuss following three ratios: productivity, efficiency, and profitability. Thereby, they revise terms such as ROI, revenue, profit, proceeds, interest, turn over, sales volume, etc.
L5	BM	Teacher C + American assistant teacher (TT)	10th	15-16	In this lesson, students' present their business administration projects in groups, proposing solutions and appropriate procedures in the case of an unfulfilled contract of sale. Afterwards, each group acted out a telephone conversation where they have to file a complaint and demand compensation.
L6	BM	Teacher C + American assistant teacher (TT)	10th	15-16	The teacher(s) and the students work on a worksheet dealing with examples of irregularities of contract of sale. Thereby, they look for possible solutions and consequent procedures.

4.4. Developing a coding framework

As mentioned in previous sections, a theoretical framework, which is based on Dalton-Puffer's construct of cognitive discourse functions, was applied to the coding process. However, as the construct is still at its early stages, resulting in gradually increasing but yet limited empirical grounding, the framework had to be modified in order to tackle some issues arising from the data to ensure best results.

4.4.1. Modification of CDF types and codes

Considering the fact that the six lessons which build the database for this study are taught in a foreign language, the aspect of translation gains great importance for the understanding of the content as well as to increase the students' language repertoire. According to Semanova (n.d.), translating has been an essential part of foreign language teaching for a long time (379). In times of globalization and internationalization in many areas of scientific and cultural in particular, an increasing amount of scientific and cultural texts written for the global society can be accessed and used for foreign language teaching (382). Although this cognitive activity is quite popular and frequently practiced in Austrian foreign language classrooms, it did not get acknowledged in the construct of cognitive discourse functions. Therefore, Kröss (2014: 35) suggested adding **translating** to the existing list of CDF types in form of the code: DEFINE-TRANSLATE. However, as translations cannot be seen as an equivalent to definitions but rather a subcategory, DEFINE-TRANSLATE is handled as an individual code which is still classified among definitions. Thereby, passages which involve simple translations from one language to another are coded as DFt, whereas passages which involve the identification of a subject's main characteristics were treated as definitions (DF).

As the data for the thesis was collected in Austrian schools and two out of the three CLIL teachers are Non-EFL teachers, all lessons include utterances and passages in the German language. When a CDF passage partially occurred in both German and English, it was considered and coded as an English CDF. However, in the case of a function entirely being carried out specifically in German, a new set of codes had to be established and affixed in order to prevent false interpretation.

The following table represents the new codes which were created for German CDF passages by attaching a "G" in form of a suffix. The codes describing English cognitive

discourse functions were adopted from a previous thesis by Kröss (2014), which studied with CDF types in Austrian CLIL Science lessons.

Table 9 Codes for English and German CDF types (Kröss 2014; adapted)

CDF type	CDF type exclusively or partially realized in English	CDF type exclusively realized in German
CLASSIFY	CL	CLG
DEFINE	DF	DFG
DESCRIBE	DS	DSG
EVALUATE	EV	EVG
EXPLAIN	EA	EAG
EXPLORE	EO	EOG
REPORT	RE	REG

As one can see, the code DEFINITION-TRANSLATION is not mentioned in the table above. This is due to the reason that all translations involve both languages and are therefore automatically treated as English passages.

Extract 1 Example of German CDF passages (L3)

01	Christina: nein. ich möcht euch heute (.) jetzt (.) eine zusammenfassung von dem artikel "vollgas in China" dazu präsentieren	
02	SS: <un>xxx</un>	
03	Christina: ja. also, amal so (.) was generelles. (2) China hat eins komma drei milliarden einwohner (.) und die- es is halt erwiesen dass die Chinesen gerne reisen beziehungsweise gerne reisen würden. (1) jaa (.) sie haben	DSG S
04	SX: @@@	
05	Christina: @ du bist deppert. (2) also, die reiselust steigt durch den wachsenden wohlstand? das heißt wir haben immer mehr geld und wolln halt das geld sozusagen durch reisen ausgeben. (1) ahm es birgt also (.) China birgt noch ein großes potential dadurch dass erst zwei prozent- also dadurch dass nur zwei prozent aahm (.) der Chinesen ei-einen reisepass besitzen	EAG S

One further issue that arose during the coding process was the fact that some CDFs occurred within another CDF passage. With respect to the first research question, which deals with the quantitative amount of CDF occurrences, following three different counting methods were applied:

- 1) All CDFs were counted, including the main, German and embedded CDFs, and therefore disregarding the language of realization.
- 2) Only the main CDFs were counted, excluding all embedded and German CDF passages.
- 3) Only the embedded CDFs were counted, analyzing which embedded CDF types occurred in which main CDF type, disregarding the language of realization.

In order to differentiate between the main and embedded CDF types, additional codes had to be created:

Table 10 Codes for main and embedded CDF types

CDF type	CDF code	Embedded CDF code
CLASSIFY	CL	CLe
DEFINE (TRANSLATE)	DF (DFt)	DFe (DFte)
DESCRIBE	DS	DSe
EVALUATE	EV	EVe
EXPLAIN	EA	E Ae
EXPLORE	EO	EOe
REPORT	RE	REe

As displayed in Table 10, cognitive discourse functions which occurred within another discourse function were coded with an “e-suffix” attached to the CDF code stem. If a CDF type, such as classify, for example, was realized in German and within another CDF, it was coded as “CLGe”.

Extract 2 will show an example of such an embedded cognitive discourse function. As this passage occurred in L6, which was taught by both an American assistant teacher as well as the main teacher, TT stands for the American assistant teacher. However, in terms of coding the realizer, TT equals T, as the American assistant teacher and the main teacher count as one realizer.

Extract 2 Example of an embedded CDF passage (L6)

01	TT: okay. le- let's assume everything's all right though. i mean you know we have another example (.) after that but (.) why wha- a- assuming he hasn't even inspected the goods, he hasn't even opened the boxes, why would the buyer refuse to accept delivery?	EO TS
02	SX: zu spät?	
03	TT: he may think it's too late, he may think it was a: (.) a fixed delivery date (.) when	
04	SX: he saw a more beautiful=	
05	TT: =he what?= 06 SX: =dishes. (1) he saw more beautiful dishes in another	
07	TT: aha there's a good point.	
08	T: mhm	
09	TT: he might have seen some dishes that he liked better, and now he just (.) he doesn't want to have to buy these dishes.	
10	SX: ahm because he thinks ahm that the goods have äh didn't (1) were not delivered according to the contract.	EAe S
11	TT: okay. (.) this is the basic point. (.) he thinks the contract has not been fulfilled. this is usually what's going to happen. (.) yes?	
12	SX: the goods are wrong or damaged.	
13	TT: okay. he might=	
14	SX: =he didn't order the goods.	

4.4.2. The realizers

As there are multiple classroom talk participators, it is of interest for the study to investigate the relation between each cognitive discourse function and its realizers. Therefore, the transcripts were primarily analyzed with regard to the CDF types, coding each passage which deals with cognitive discourse functions with the respective CDF codes. Subsequently, the realizer of the passage was identified, labeling the passage with codes which were affixed beforehand, as displayed in Table 11.

Table 11 Codes for realizers

REALIZER	CODE
Teacher	T
Student	S
Teacher-Student	TS

Was a cognitive discourse function realized by the teacher only, the passage was coded as T. As mentioned in section 4.3., Teacher C is accompanied by an American assistant teacher (TT) in L6. However, as L6 is the only lesson which involves team teaching, passages realized by the assistant teacher were coded as T (teacher) in order to maintain consistency with respect to coding among all lessons. If one or more students performed the realization of a CDF, it was coded S (students). However, if a CDF passages was realized interactionally, including both teacher(s) and student(s), the code affixed to the passage was TS (teacher-student).

4.4.3. Overview of codes

The following extract presents a passage that includes a variety of codes in order to show what a completely coded passage looks like. Thereby, the passage involves all three realizers (T, S, and TS) as well as an embedded German CDF which was produced by a student who explained his or her logic for the translation of a word or phrase as well as the teacher's subsequent final explanation of the translation. Overall, the passage deals with the translation of a German term into English, involving both teacher and students.

Extract 3 Example of a completely coded passage (L4)

01	Christoph: bettenauslastung, utilization?	DFt TS
02	T: yes?	
03	SX: whaaa @@@	
04	T: i- mean- just- just one moment (.)	
05	SX: was heißt das utilization?	
06	T: i gave you the word utilization, which I found in the dictionary.	
07	SX: utilization	

08	T: i have now found a new word, which which they call the (.) occupancy rate, and i will (.) a- (.) have you <8>heard</8> about occupancy rate?	
09	S11: <8>yes</8>	
10	S12: <8>yes</8>	
11	SX: mhm	
12	T: ah i will ask Mrs. ah Göschwold next time (.) <9>which- so, put</9> in both (.) and <10>we will ask</10> her which (.) which one fits best. (.) the one is utilization and the other one is occupancy rate for auslastung. i think utilization is is a word mainly used for machines and so on, and therefore (.) it might be better- utili-zation or	
13	Daniel: <9>na: die Götschi</9> (1) <10>please don't ask her</10>	
14	SS: <un>xxx</un>	
15	T: or occupancy rate. and i (.) i think that maybe occupancy rate is even better, but we'll ask her and she will tell us.	
16	SX: okay, sonst würd ja nicht unten occupied bed stehn.	EAGe S
17	Daniel: but ah	
18	T: ya	
19	Daniel: doesn't	
20	T: it's because of the occupied (.) beds	EAc T
21	Daniel: occupied (.) okkupieren?	
22	T: okkupieren besetzen, belegen heißt das eigentlich.	
23	Daniel: belegen, besetzen	

The following table (c.f. Table 12) constitutes a list of all CDF codes which were used during the coding process. Thereby, each CDF passage was assigned to at least one CDF code as well as a realizer.

Table 12 List of all codes with explanation

CDF TYPES	
CL - CLASSIFY	
CLe	embedded classification
CLG	classification performed in German
CLGe	embedded classification performed in German
DF - DEFINE	
DFe	embedded definition
DFG	definition performed in German
DFGe	embedded definition performed in German
DFt	translation
DFte	embedded translation
DS - DESCRIBE	
DSe	embedded description
DSG	description performed in German
DSGe	embedded description performed in German
EV - EVALUATE	
EVe	embedded evaluation
EVG	evaluation performed in German
EVGe	embedded evaluation performed in German
EA - EXPLAIN	
EAe	embedded explanation
EAG	explanation performed in German
EAGe	embedded explanation performed in German
EO - EXPLORE	
EOe	embedded exploration
EOG	exploration performed in German
EOGe	embedded exploration performed in German
RE - REPORT	
REe	embedded report
REG	report performed in German
REGe	embedded report performed in German
REALIZERS	
T	teacher
S	student
TS	teacher-student

5. Findings and preliminary interpretations

As only four of the six analyzed lessons were available in form of audio files, a total of approximately 161 recorded minutes (each lesson was rounded to full minutes) resulted in an average of 40 documented minutes per lesson. Although all lessons conducted in Austrian schools consist of 50 minutes, the actual teaching time varies due to organizational issues, such as the teacher arriving at the classroom, preparing their material, discussing future fieldtrips, etc. The remaining two lessons which were previously documented in form of written transcripts partially include the transcription of organizational teacher talk and are do not differ from the four audio-taped lessons in terms of information volume.

Relative numbers presented in tables were rounded to the first decimal (e.g. 19.4%) whereas percentages displayed in charts were rounded to the nearest whole number (e.g. 19%). Data in form of absolute figures were neither rounded up nor down as they are total intervals.

5.1. Frequency and types of CDF passages

Overall, a total of 480 CDF passages, including German and embedded CDFs, were identified within the analyzed data, amounting to an average of 80 CDF passages per lesson. Considering that one lesson lasts 50 minutes or less, one can assume that at least three CDF passages occur within every two minutes. The highest amount of CDF occurrences were detected in both L1 and L2, which included the significant amount of 116 CDF passages each, whereas L6 shows a total of 58 the least amount of CDF passages, which is exactly half as many instances as detected in L1 and L2. All CDF types were realized, however, the following three codes did not occur throughout all six lessons:

- 1) CLGe
- 2) EVGe
- 3) EOe

As these codes did not occur neither in teacher, student or teacher-student talk, they can be removed, amounting to a total of 27 codes as well as three realizer codes. The following quantitative analysis of the frequency and distribution of CDF types and codes includes all embedded CDFs as well as all German CDFs.

5.1.1. Frequency of CDF types and codes

In order to get a better impression of the weighting of each CDF type as introduced by Dalton-Puffer (2013), all codes were primarily bundled into their respective CDF type groups. Furthermore, as suggested by Dalton-Puffer's construct, DEFINE-TRANSLATE and DEFINE were considered as one CDF type (DF), however, the results for DEFINE-TRANSLATE are displayed in parentheses as they frequently show interesting results which are worth analyzing in more detail. Therefore, if, e.g., there are 33 total occurrences of defining, with 22 cases of translating, then the numbers are presented as 33(22).

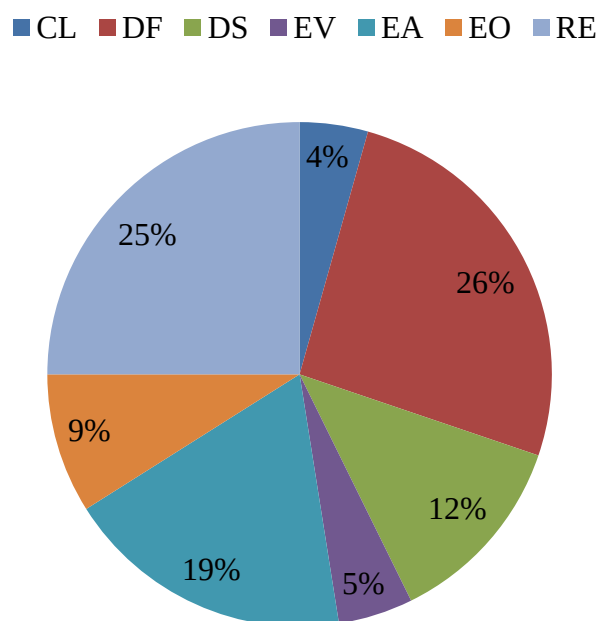


Figure 6 Frequency of CDF types in percent

As depicted in the figure above, the CDF types DEFINE and REPORT are the most prominent discourse functions. This pie chart illustrates how these two CDF types combined amount to more than half of all CDF occurrences. 26 percent of all cognitive discourse functions detected in the analyzed data are related to **defining**, which equals the total of CDF occurrences of DESCRIBE, EVALUATE, and EXPLORE combined. Comparing these findings to the previous studies by Kröss (2014) and Hofmann and Hopf (2015), one can detect some inconsistencies as DEFINE is presented to be realized significantly less often, with DESCRIBE being the most frequently occurring CDF type. In addition, defining plays no significant role in the HAK curriculum, whereas **classifying**, which only amounts to four

percent of all CDFs, is represented significantly in the curriculum. As illustrated in Figure 6, CLASSIFY is the rarest of all CDF types, occurring only four out of a hundred times. This finding is consistent with Kröss's and Hofmann and Hopf's, who ranked CLASSIFY as one of the more seldom performed CDF types. Furthermore, EVALUATE is the second least frequent discourse function type, which contradicts the curricular weighting, as **evaluating** is a cognitive activity which receives a lot of recognition in the HAK curriculum. When looking at Kröss' (2014) and Hofmann and Hopf's (2015) findings, EVALUATE appears to be among the least frequently realized CDF types in the context of all existing studies. One CDF type which is on the one hand mentioned to a great extent in the curriculum and shows a high frequency of occurrences throughout the data on the other hand is REPORT. Not only is **reporting** the CDF which is represented the strongest in the HAK curriculum but with 25 percent of all CDF realizations, REPORT is also the second most common CDF type. This contradicts Hofmann and Hopf's study's outcome, which states that REPORT only occurred 9 out of 100 times (2015: 82).

The following figure illustrates the distribution of all CDF occurrences excluding embedded, German, or German embedded CDF passages with DEFINE-TRANSLATE being included as a form of DEFINE. A total of 332 occurrences were detected, amounting to 69.2 percent of all 480 CDF passages realized within the dataset.

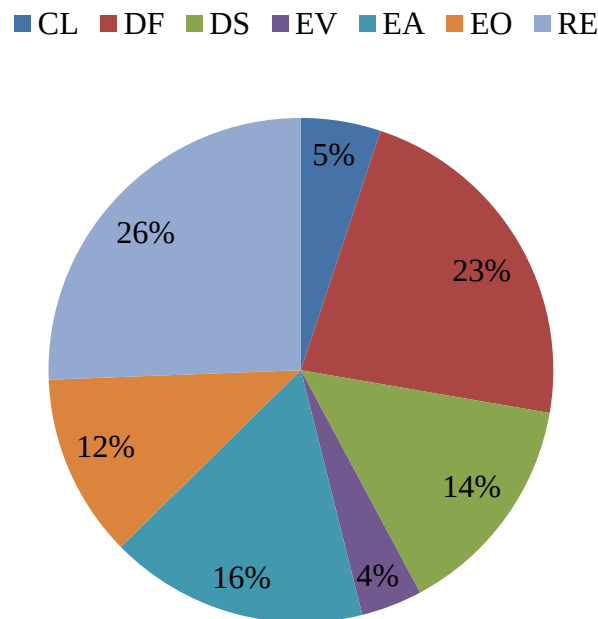


Figure 7 Frequency of CDF types without embedded, German, or German embedded CDFs in percent

When comparing Figure 6 to Figure 7, one can see that the distribution of the main CDFs shows only very limited alterations and is generally consistent with the frequency of all CDF codes combined. Whereas DEFINE and EXPLAIN lost about three percent points, DESCRIBE and EXPLORE increased moderately. Overall, however, it can be concluded that the factors **German** and **embedding** do not have a significant impact on the results. These two factors will be looked at individually in more detail in consequent subsections.

The following pie chart offers a summary of all CDF codes which were realized in the data in percent. The three CDF codes which were not realized are not represented in the following illustrations, however, as already mentioned some CDF codes still seem to occur as zero percent. This is purely due to the reason that they occurred less than twice throughout the whole data and therefore amount to less than one percent. Therefore, a subsequent table including absolute numbers will provide better insight into the distribution of each code.

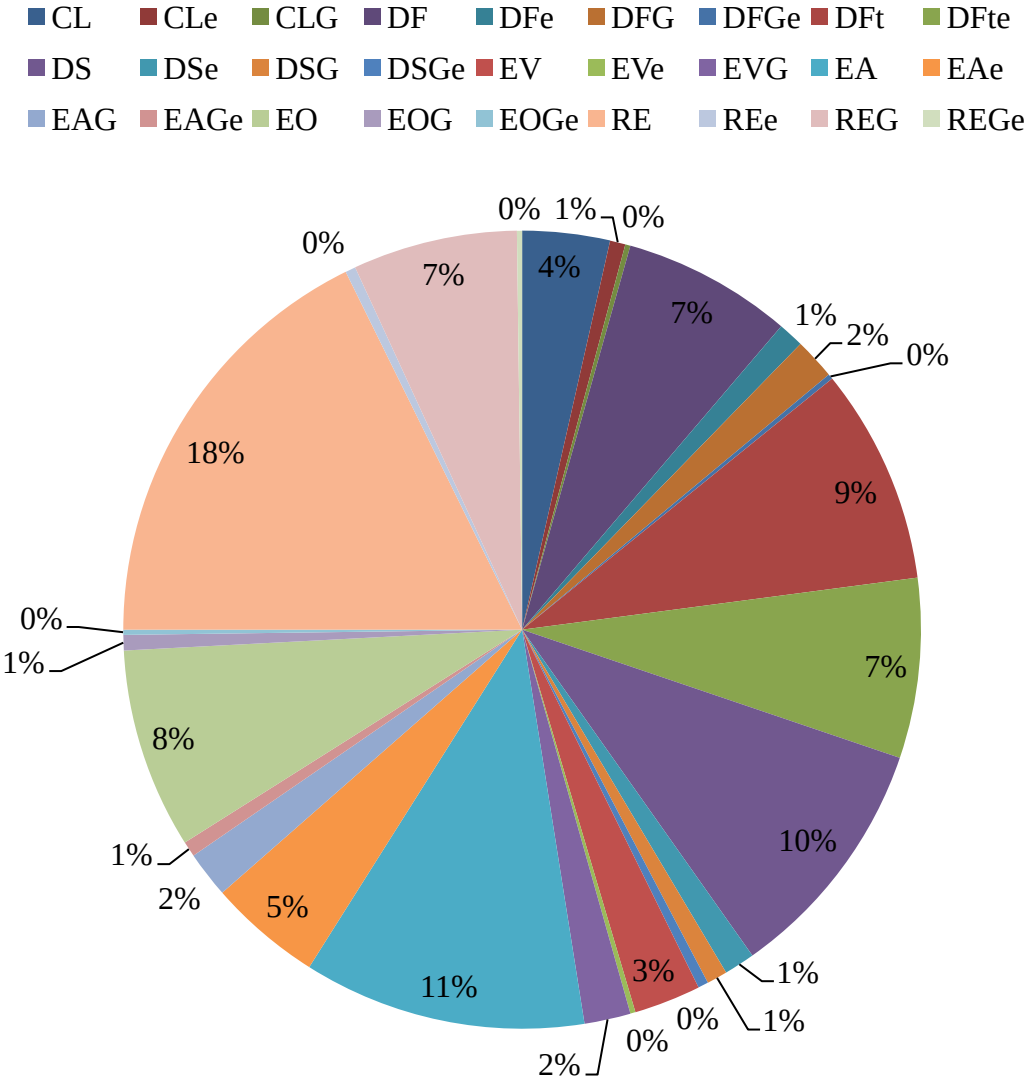


Figure 8 Frequency of CDF codes in percent

There are seven codes (CLG, DFGe, DSGe, EVe, EOGe, REe, REGe) which only occurred once or twice throughout the whole data and are therefore displayed in the pie chart (c.f. Figure 8) as zero percent. Figure 9 illustrates the total amount of all occurring CDF codes in relation to each other.

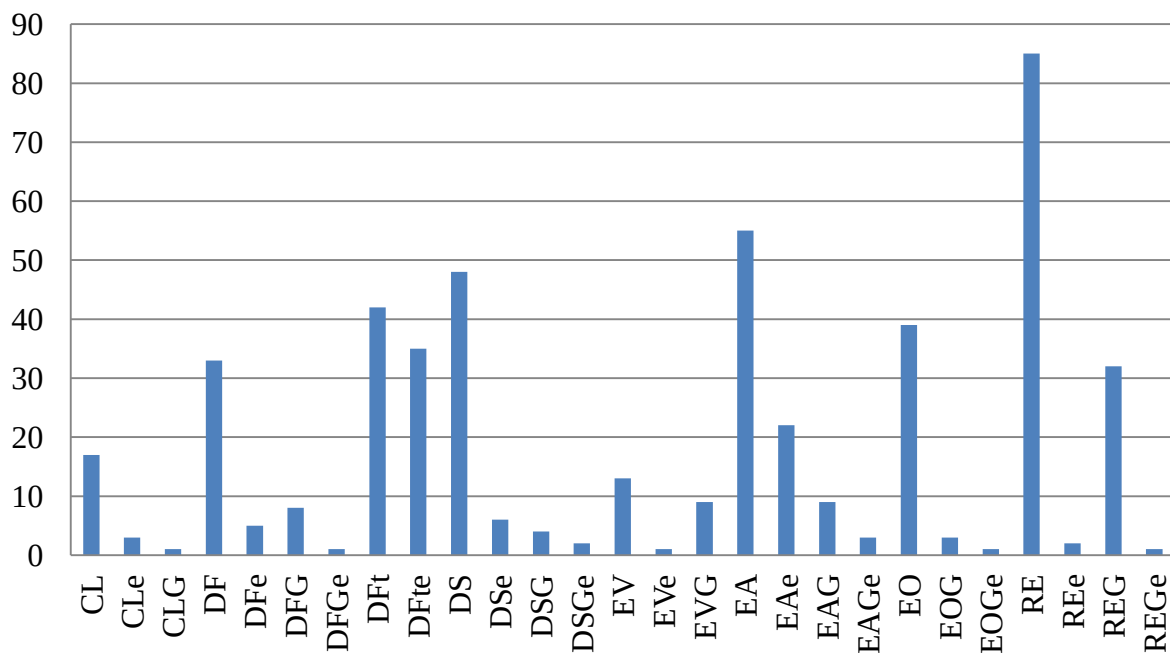


Figure 9 Frequency of CDF codes in absolute numbers

As one can notice, four of these aforementioned seven codes are CDF which were realized in German and are embedded within another CDF passage. Considering that two of the three codes which were not realized at all were also German CDF which occurred within another discourse function (CLGe, EVGe), once can assume that this form of code is very rare. Only EAGe occurred more than twice, however, as it was only realized three times throughout all six lessons it amounts to merely one percent. When adding up all German CDF passages which occur within another CDF passage one reaches a total of 8, which is only 1.7 percent of all CDF realizations.

On the contrary, one CDF code, namely RE, attracts a lot of attention as its frequency amounts to 18 percent, which is almost one fifth of all CDF realizations. Furthermore, DFt as well as DFte stand out due to the high amount of realizations of the discourse function by itself as well as embedded within another discourse function. Although the main CDF usually exceeds the embedded one by far, DFte (7%) shows with only two percent less than DFt (9%)

a high frequency. When looking at each individual CDF type, one can see that the main CDF, such as CL, DF, EA, etc., stand out by their greater amount of realizations compared to codes connected with the German language or embedding.

The following main conclusions are solely based on the data which was analyzed and are primarily hypotheses. In order to make more profound statements with regard to the distribution of the seven CDF types as well as the introduced codes a larger set of data would be required.

- The data barely includes any German CDF passages which occurred within another CDF passage.
- The main CDF type was always significantly more frequently realized than German codes or embedded codes.
- The translational aspect of defining plays a great role and occurs more frequently than defining as a cognitive activity itself.
- Embedded translations are very common.

5.1.2. Frequency of CDF types across lessons

Table 13 depicts a summary of all occurrences of the seven CDF types across all six lessons. The translational occurrences of DEFINE are indicated in brackets in order to help investigate tendencies.

Table 13 Frequency of CDF types per lesson in absolute numbers

CDF types	LESSONS						TOTAL
	L1	L2	L3	L4	L5	L6	
CL	12	6	1	2	0	0	21
DF(DFt)	33(22)	39(25)	10(5)	18(11)	4(2)	20(12)	124(77)
DS	23	18	8	6	2	3	60
EV	2	4	4	0	12	1	60
EA	16	17	6	14	21	15	89
EO	8	13	3	8	2	9	43
RE	22	19	36	15	18	10	120
TOTAL	116	116	68	63	59	58	480

When looking at the total amount of each CDF type, it is immediately noticeable that the CDF types DEFINE and REPORT are strongly represented as they both individually amount to a

quarter of all occurrences. Interestingly, the translational aspect of defining is very prominent as DEFINE-TRANSLATE adds up to half or more than half of all occurrences regarding defining activities. Furthermore, Table 13 shows that 20.7 percent, which equals one fifth of all CDF occurrences, are related to DEFINE-TRANSLATE, supporting the claim made by Semanova in section 4.4.1., who states that translating constitutes a prominent classroom activity in foreign language classrooms.

Table 14 Frequency of CDF types per lesson in percent

CDF types	LESSONS					
	L1	L2	L3	L4	L5	L6
CL	10,3	5,2	1,5	3,2	0	0
DF(DFt)	28,5(19)	33,7(21,6)	14,8(7,4)	28,6(17,5)	6,8(3,4)	34,5(20,7)
DS	19,8	15,5	11,8	9,5	3,4	5,2
EV	1,7	3,4	5,9	0	20,3	1,7
EA	13,8	14,7	8,8	22,2	35,6	25,9
EO	6,9	11,2	4,4	12,7	3,4	15,5
RE	19	16,4	52,9	23,8	30,5	17,2
TOTAL	100	100	100	100	100	100

All CDF types were realized in all lessons besides EVALUATE, which was not realized in L4, as well as CLASSIFY, which did not occur in lessons L5 and L6. CLASSIFY is furthermore the CDF type which was the least frequently realized with a total of only 21 occurrences.

When looking at Table 14, which illustrates the frequency of the seven CDF types in form of percentages, one can see that throughout all lessons REPORT is realized to an extent of at least 16.4 percent, which is more than one seventh. Therefore, one can argue that REPORT is overall the most prominent CDF type as DEFINE does occur more frequently but not as consistently as REPORT. However, on the other hand, DEFINE is the most realized CDF type in four out of six lessons (L1, L2, L4, L6). Furthermore, when looking at the distribution of EXPLAIN, which is the third most frequently realized CDF type, it is noticeable that it is distributed quite consistently with the exception of L5, where a little more than 35 percent of all realized cognitive discourse functions were related to explaining. However, one CDF type which shows a very inconsistent distribution is EVALUATE. The percentages presented in Table 14 highlights this inconsistency as EVALUATE occurred to over 20 percent in L5, whereas in L4 it did not occur at all.

As displayed in Figure 10, one can see that L3 includes a significant amount of reports, whereas the other CDFs are rather underrepresented. This is due to the fact that L3

mostly consists of student presentations which required additional time for preparations (approximately 11-12 minutes), resulting in the majority of classroom interaction to be a form of student talk whereas no CDFs occurred during the preparation time.

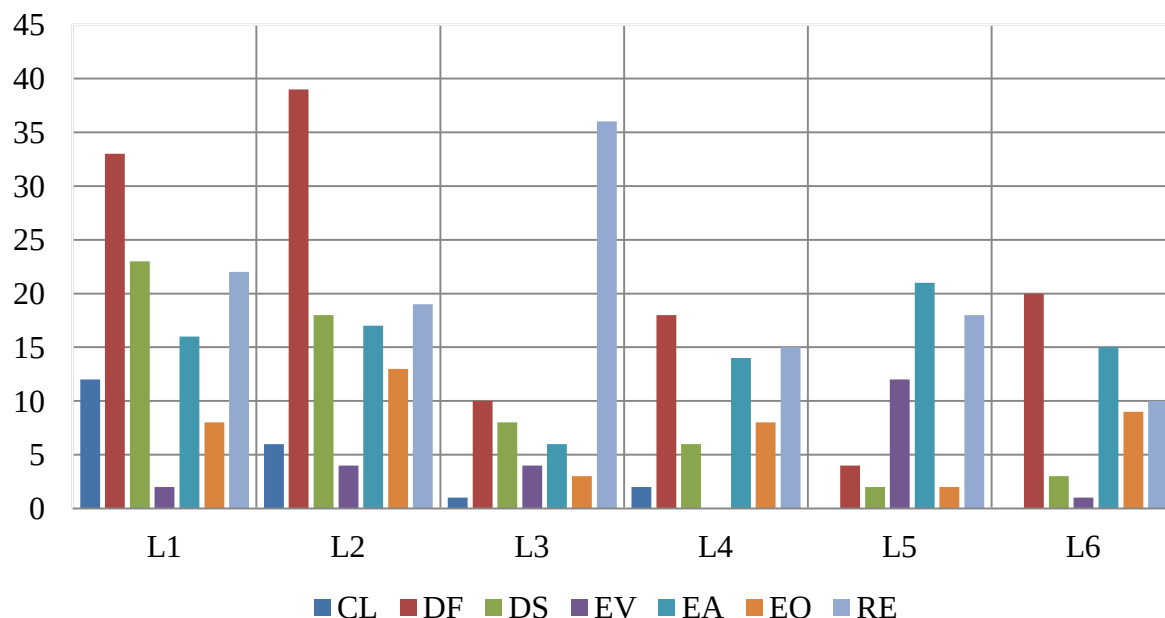


Figure 10 Distribution of CDF types across lessons in absolute numbers

Despite some statistical discrepancies detected in the overall distribution of the main CDF types across the six lessons, as illustrated in Figure 10, the results nevertheless legitimately represent authentic classroom practice. Yet, this classroom practice is influenced by various factors, such as the students' skills and performance, upcoming exams or holidays, the lessons' contents and the teachers themselves and their preferences with regard to classroom activities. Most of these factors, however, are not directly observable from the data, whereas others, such as the lessons' content and the teachers' individual style and preferences can be detected and analyzed with respect to the distribution of cognitive discourse functions.

5.1.3. Frequency of CDF types across teachers

As the relation of CDF occurrences with the nature of the lesson has already been studied in the section above, the focus will now lie on the teachers, including their language abilities and preferences regarding classroom activities. Thereby, the data was grouped into three groups according to the three teachers who taught the lessons without taking the realizers of the CDF

passages into consideration. The three groups were labeled as Teacher A (L1, L2), Teacher B (L3, L4), and Teacher C (L5, L6), with the assistant teacher and the main classroom teacher of lessons L5 and L6 counting as one teacher (Teacher C). In order to gain a better insight into the distribution of the main CDF types, all codes were bundled into their respective CDF type category, as some codes occurred less than one percent and can therefore be seen as statistically insignificant.

In Figure 11, each teacher shows a different pattern with regard to which CDF type is the most and the least dominant. This may be the result of the teachers' great diversification with regard to their language ability, preferences of activities and teaching style.

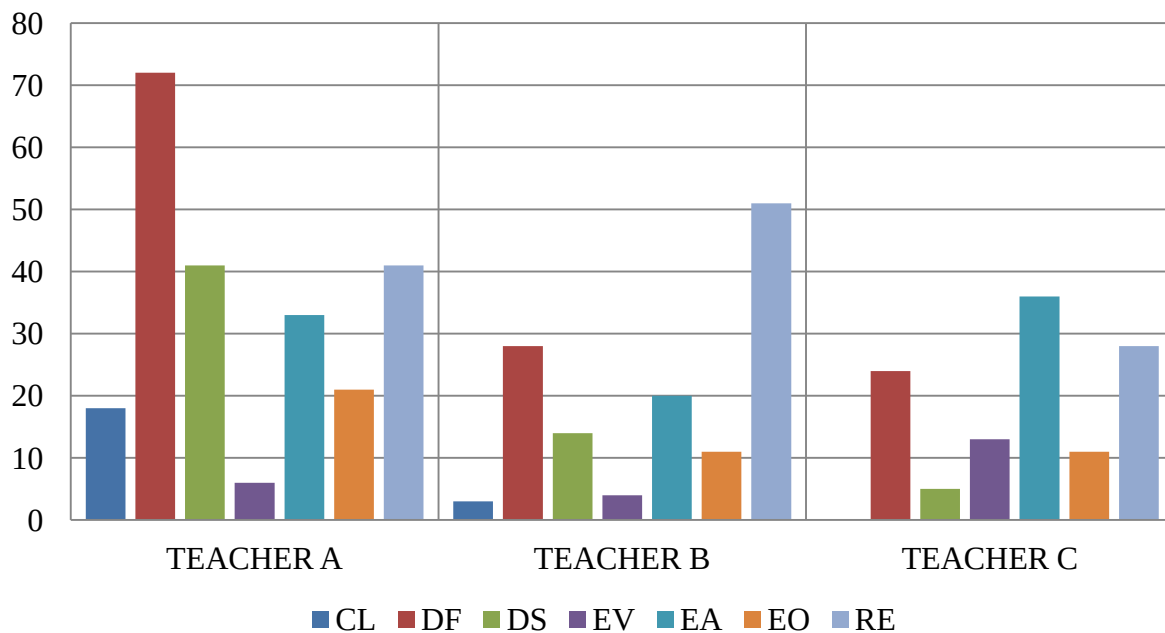


Figure 11 Distribution of CDF types across teachers in absolute numbers

Teacher A, who is a Non-EFL teacher as well as a German native speaker shows with 72 occurrences a significantly high amount of occurrences of DEFINE, including DEFINE-TRANSLATE. Interestingly, 47 of these 72 occurrences of DEFINE, which amounts to 65 percent, are passages related to translating, which seems to be a great focus point in Teacher A's classroom activities. One could argue that due to the teacher's missing EFL training, German, and therefore also translations, still remain an important factor during classroom talk. However, the weighting of the use of German language in the context of CDFs will be analyzed in a more detailed manner in section 5.1.4. Although all CDF types were realized very frequently with a total of 232 CDF occurrences, classroom activities dealing with

evaluation seem to be rather underrepresented, whereas DESCRIBE and REPORT are both the second most realized CDFs with regard to Teacher A.

Teacher B, on the other hand, seems to value **reporting** the most, as REPORT is almost twice as often realized as the second most frequent CDF type DEFINE. As DEFINE was realized 28 times, of which 16 passages were related to translating, one can see that the translational aspect is not weighted as much as in the case of Teacher A. However, with 57 percent of all DEFINE occurrences, DEFINE-TRANSLATE does also seem to be important to the EFL teacher. Furthermore, EVALUATE is also rather underrepresented with CLASSIFY being the least often realized discourse function type.

When looking at Teacher C, one immediately notices that CLASSIFY was not realized at all. However, EVALUATE, which in the case of Teacher A and Teacher B was significantly underrepresented, shows to be the median with a total of 13 occurrences, which is more than all the other teachers' realizations of EVALUATE combined. Furthermore, EXPLAIN, a CDF type which is only ranked third and forth with regard to Teacher A and B, was realized 36 times and therefore the most frequently compared to Teacher A and B. In contrast, DEFINE was with only 24 occurrences, compared to Teacher A (72) and Teacher B (28), not as strongly represented. Moreover, with only 14 passages of DEFINE-TRANSLATE, one might argue that the American assistant teacher's language ability and input might have had a strong influence on the lessons' focus on German translations as the class teacher is a German native speaker who has no training in the field of English as a foreign language. However, as the teacher is a trained business educator who has experience working with English in the professional field, her main focus and preference might lie within other activities and therefore cognitive discourse functions.

Figure 12 displays the distribution of the seven CDF types among the teachers in percent, which allows a better overview of the relations of the CDF types within the respective three groups.

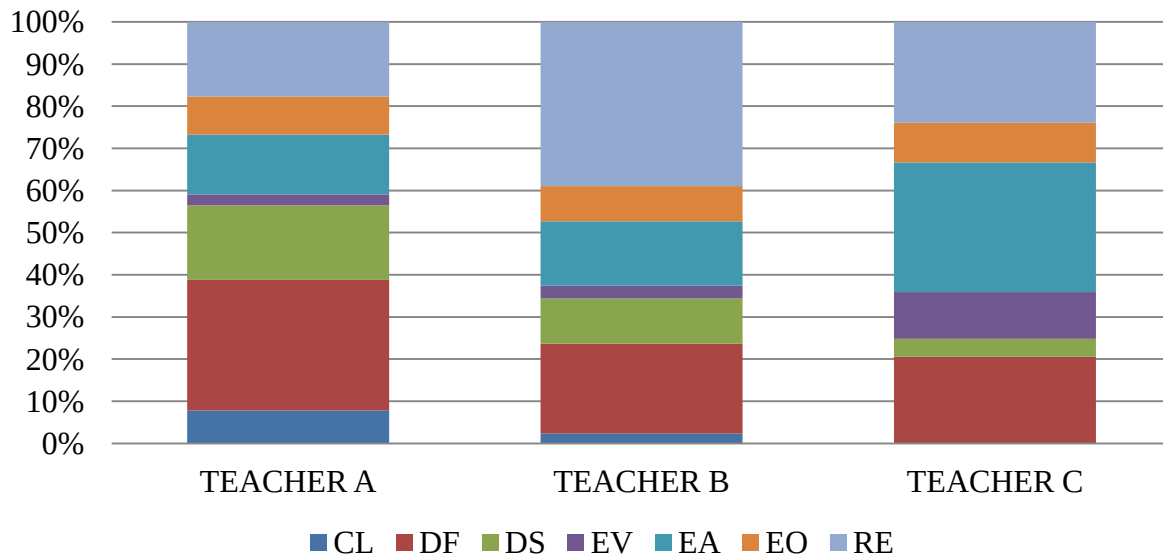


Figure 12 Distribution of CDF types across teachers in percent

As depicted in Figure 12, there is one CDF type which seems to be relatively equally frequently realized among all teachers, namely EXPLORE. With a range from eight to nine percent, EXPLORE seems to be the only CDF type which is distributed evenly across all teachers. The frequency of the distribution of the seven CDF types as well as their relation to the other types differs strongly with respect to the three teachers. What one can conclude, however, is the fact that some CDF types remain clearly dominant neglecting the teachers' language abilities and training. Such CDF types would be REPORT, DEFINE and EXPLAIN.

As aforementioned, taking the data above into consideration, one can say that the distribution of the CDF types depends on two variables: the lesson and/or the teacher. When a CDF type occurs consistently throughout all lessons but still varies with respect to the teacher, then the CDF type can be claimed to be dependent on the lesson, vice versa. The following conclusions which were drawn from the analysis of the database cannot be mistaken for factual generalizations but are purely hypotheses based on the data. A larger number and variety of lessons, including a higher diversity of teachers, would need to be studied in order to make more profound statements with regard to the influence of the two variables on the distribution of the seven CDF types.

- CLASSIFY is teacher based as the frequency of occurrences is consistent with the teacher.
- DEFINE is teacher based.
- DESCRIBE is teacher based.

- EVALUATE is lesson based as the frequency is inconsistent with the teacher.
- EXPLAIN is lesson based.
- EXPLORE is lesson based.
- REPORT is lesson based.

After presenting and analyzing the data in terms of categorized codes, the data will now be looked at with a more detailed perspective, taking all codes into observation. Thereby, two factors were added to the existing CDF types, namely whether the CDF passage was realized exclusively in German and whether it was embedded within another CDF passage.

5.1.4. German CDF passages

This analysis of German CDF passages includes embedded passages which were exclusively realized in German. Thereby, the focus will firstly lie on the aspect of language at with regard to the distribution of German CDFs among CDF types, lessons, as well as their respective realizers. A total of 74 German CDFs occurred within the data, which amounts to 15.1 percent of all cognitive discourse functions passages realized in the six lessons.

The following table, Table 15, briefly states the absolute total of German CDF occurrences with respect to each CDF type.

Table 15 Total number of occurrences of German CDF types

CL	DF	DS	EV	EA	EO	RE
1	9	6	9	12	4	33

As indicated in Table 15, the absolute number of German CDF occurrences varies significantly across all CDF types. However, each CDF type was at least once realized in German. With 33 instances, RE is the most common CDF type to include the linguistic aspect of German, whereas CL is only realized in German once within the whole dataset, which is also due to the fact that CLASSIFY was significantly less frequently realized as REPORT.

In order to detect which CDF type shows strong relations to the German language in terms of percentages, one needs to look at Figure 13, which illustrates the relative distribution of all occurring German CDF passages among the seven CDF types.

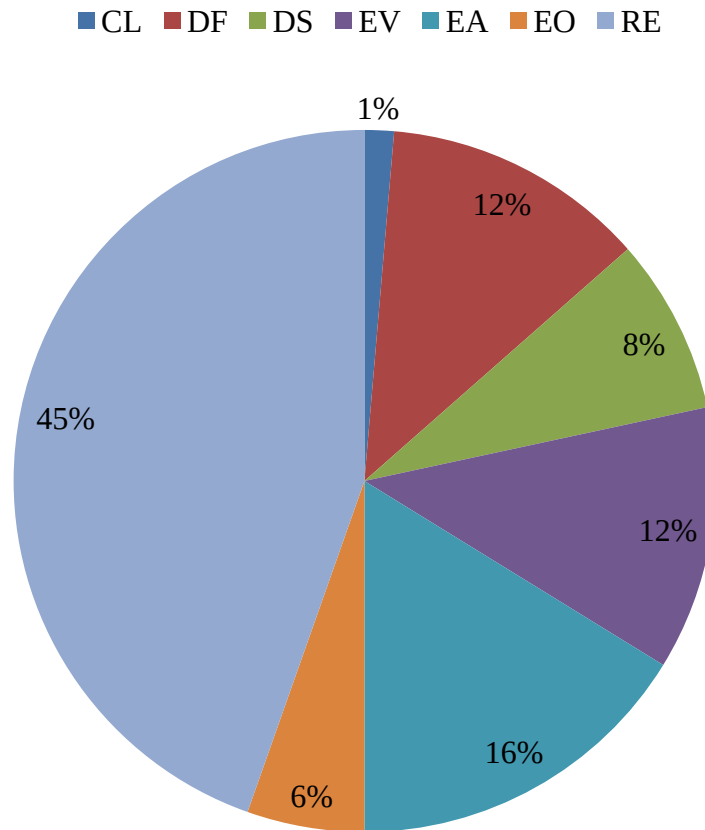


Figure 13 Distribution of German CDFs across CDF types in percent

As already indicated in Table 15 and illustrated in Figure 13, some CDF types were realized more often in German than others, such as REPORT, for instance, which occurred the most frequently in German (45%) compared to the other CDF types, amounting to almost three times as many occurrences as the second most frequently realized German cognitive discourse function. CLASSIFY, on the other hand is with only one percent barely represented, which is due to the fact that the CDF type is generally realized very seldom (4% of all CDF occurrences). Overall, with the exception of REPORT, the frequency of German CDF passages is consistent with the pattern of CDF type occurrences considering that DEFINE-TRANSLATE was not taken into account.

Figure 14 provides more insight into the distribution of German CDFs among the six lessons as well as the frequency of each individual German CDF code in absolute numbers.

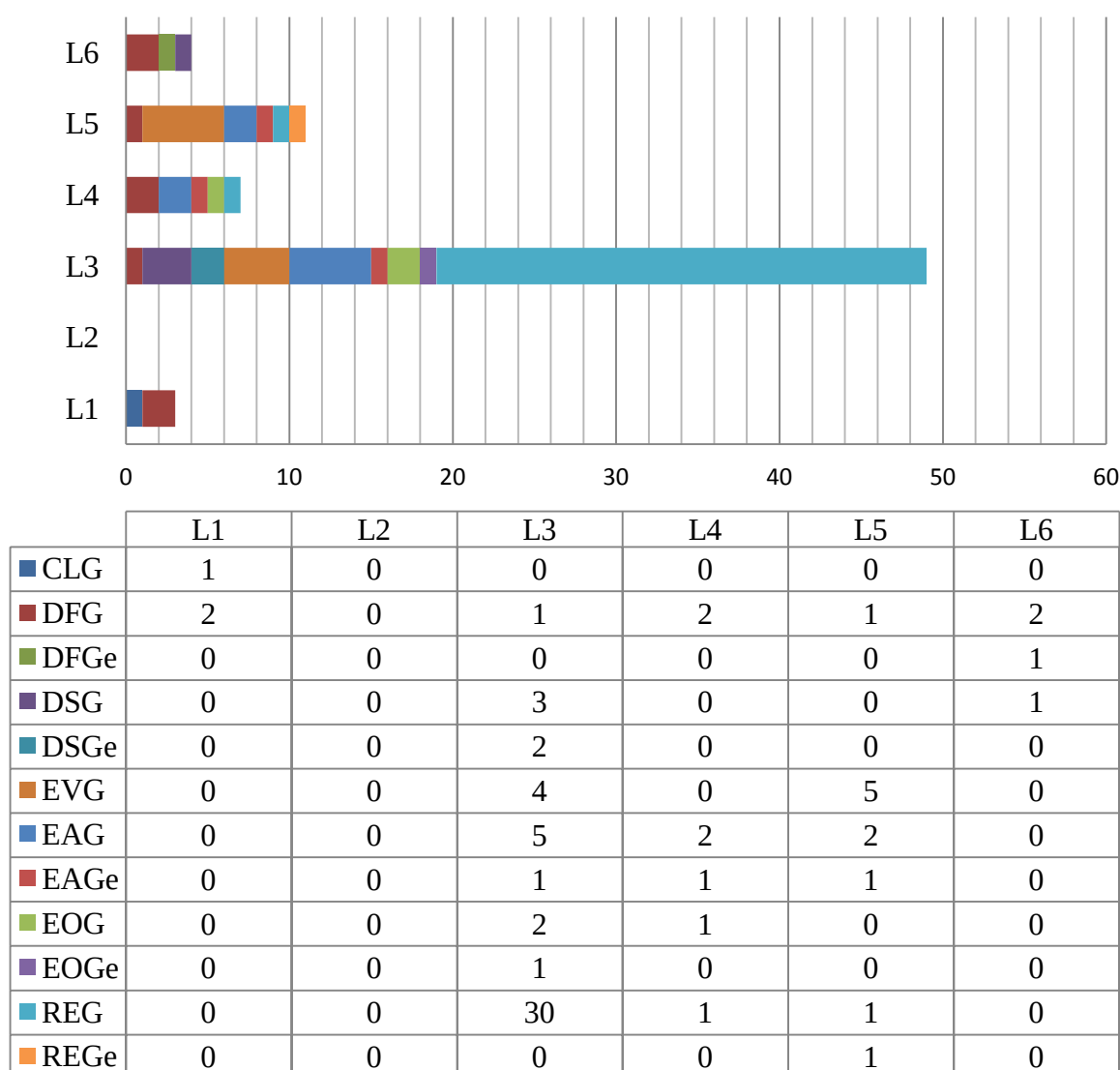


Figure 14 Distribution of German CDFs across lessons in absolute numbers

One can see that the great amount of German REPORT realizations is due to the high frequency in L3, which alone amounts to 30 occurrences. This is due to the fact that the lesson mainly consisted of student presentations, which were mostly held in German. Therefore, students are the dominant realizers of German CDFs, as illustrated in Figure 15. Lastly, with only three German CDF passages in L1 and zero occurrences in L2, it is observable that Teacher A's lessons' classroom talk puts a lot of focus on the use of the English language as a working language, which is very interesting due to the fact that Teacher A is neither an EFL teacher, nor assisted by a Native team teacher. In contrast, Teacher B, who is the only trained EFL teacher among all three teachers, shows to integrate and allow the German language to the greatest extent.

After investigating the distribution of German cognitive discourse functions across all lessons and their respective teachers, the focus will now lie on the realizers of these German CDF occurrences as illustrated in Figure 15.

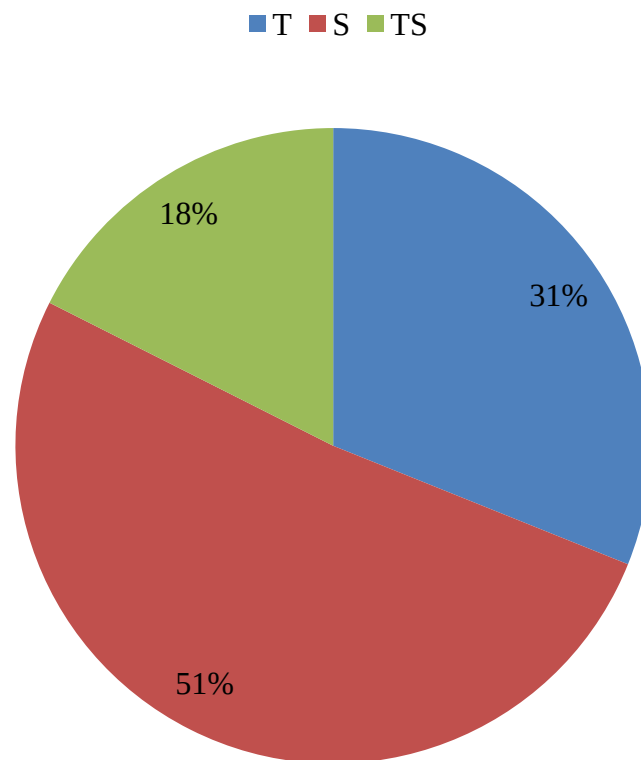


Figure 15 Distribution of German CDFs across realizers in percent

As already aforementioned, the main realizers of German CDF passages are students. Over half of all German CDF occurrences were performed by students only, whereas only one third of German CDFs were realized by the teacher alone. 18 percent were performed within classroom talk involving both the teacher and the students. However, it is important to investigate which German CDF shows strong relations to which realizer, as well as the absolute number of German CDF occurrences, as displayed in Table 16.

Table 16 Distribution of German CDFs across realizers in absolute numbers

CODES	T	S	TS	TOTAL
CLG	1	0	0	1
DFG	4	1	3	8
DFGe	1	0	0	1
DSG	2	2	0	4
DSGe	0	2	0	2
EVG	4	3	2	9
EAG	4	5	0	9
EAGe	0	3	0	3
EOG	0	1	2	3
EOGe	0	1	0	1
REG	6	20	6	32
REGe	1	0	0	1
TOTAL	23	38	13	74

When looking at Table 16, one can see that the high proportion of students' German CDF realizations is due to the many occurrences of German reports, which alone amount to a total of 20 occurrences. Considering a total of 74 German CDF passages, 20 occurrences equals 27 percent, which is only four percentage points less than all German CDF passages realized by the teachers combined. Nonetheless, REG is not only the most frequently realized German CDF among students, but also among teacher talk and teacher-student talk. This strikingly high frequency of German REPORT is consistent with the results gained from the analysis of only the main CDF passages, disregarding German, embedded, or German embedded CDFs, which shows that REPORT is the CDF which is realized the most often.

The following conclusions were drawn based on the results gained from this research, which is limited to the study of only six lessons. In order to make more wide-ranging claims with regard to the German CDFs, one would need to investigate a larger set of data.

- Most German CDFs are reports
- The amount of German CDF occurrences is strongly dependent on the nature of the lesson as well as the teacher's ELT qualifications
- Students are the most frequent realizers of German CDFs

5.1.5. Embedded CDF passages

As discussed in section 4.1.1., a total of three different counts were executed with regards to the distribution of embedded cognitive discourse functions. The first count suggests that all CDFs should be counted, including the main and embedded CDFs, disregarding the language of realization whereas the second count proposes to count only the main CDFs, excluding all German and embedded CDF passages. The results of the first and second count were discussed in section 5.1.1.

The third count solely focuses on the frequency and distribution of embedded CDF passages, disregarding whether they were realized in German or English. A total of 82 occurrences were detected, amounting to 17.1 percent of all 480 CDF passages realized in the dataset. Figure 16 illustrates which CDF code occurred within another CDF more or less frequently.

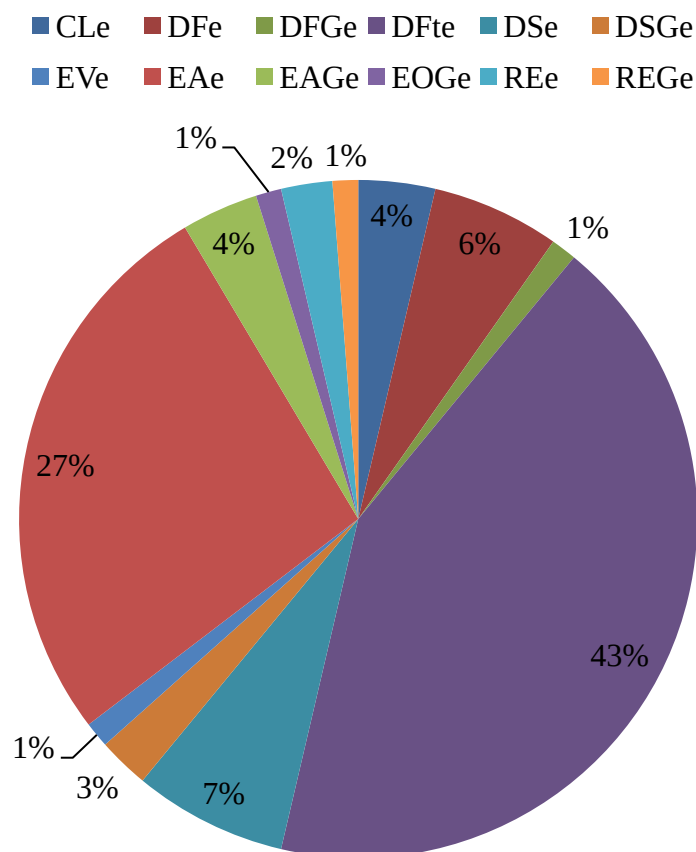


Figure 16 Frequency of embedded CDFs in percent

One CDF code which was strikingly realized almost as often as all other embedded CDFs combined is DFte. However, as one can read from Table 17, DFte does not occur consistently across all lessons but is very present in L1 (19 occurrences) and L2 (12 occurrences). Interestingly, L1 and L2's teacher, Teacher A, shows the least amount of German CDF occurrences, yet the highest frequency of embedded translations. The second most often realized embedded CDF is EAe (27%), which, in contrast to DFte, was performed frequently across all lessons with only one exception of L3.

Table 17 Frequency of embedded CDFs across lessons in absolute numbers

CODES	LESSONS						TOTAL
	L1	L2	L3	L4	L5	L6	
CLe	1	2	0	0	0	0	3
DFe	0	1	3	0	1	0	5
DFGe	0	0	0	0	0	1	1
DFte	19	12	0	1	1	2	35
DSe	2	1	0	3	0	0	6
DSGe	0	0	2	0	0	0	2
EVe	1	0	0	0	0	0	1
EAe	4	3	0	4	9	2	22
EAGe	0	0	1	1	1	0	3
EOGe	0	0	1	0	0	0	1
REe	0	0	2	0	0	0	2
REGe	0	0	0	0	1	0	1
TOTAL	27	19	9	9	13	5	82

As illustrated in Table 17, embedded CDFs only occurred within a total of eleven CDF codes. In order to prevent distractions from the main focus, only these eleven CDF codes are included in Table 18. Thereby, the two dimensional display of the data serves to provide a better insight into the relations of embedded CDFs as well as the CDF codes they occur within, highlighting numbers which constitute remarkable representations in red.

Table 18 Embedded CDF type occurrences across CDF types

Embedded CDFs	CDFs											TOTAL
	CL	DF	DFt	DS	DSG	EA	EO	EV	EVG	RE	REG	
CLe	0	0	0	1	0	0	1	0	0	1	0	3
DFe	0	0	0	0	0	0	1	0	0	2	1	4
DFGe	0	0	0	0	0	0	0	0	0	1	0	1
DFte	1	1	0	13	1	3	4	0	0	10	1	34
DSe	0	0	0	0	0	0	0	0	0	4	0	4
DSGe	0	0	0	0	0	0	0	0	0	0	4	4
E Ae	0	0	1	1	0	0	6	2	0	13	0	23
EAGe	0	0	1	0	0	0	0	1	1	0	1	4
EOGe	0	0	0	0	0	0	0	0	0	0	1	1
EVe	0	0	0	0	0	0	0	0	0	1	0	1
REe	0	0	0	2	0	0	0	0	0	0	0	2
REGe	0	0	0	0	0	0	0	0	1	0	0	1
TOTAL	1	1	2	17	1	3	12	3	2	32	8	82

After looking at all embedded CDFs as well as the respective CDF type they occurred within, following relations became apparent:

- DFte often occurred within DS (13 times).
- DFte frequently occurred within RE (10 times).
- EAe frequently occurred within RE (13 times) and EO (6 times).
- DESCRIBE occurred within REPORT (4 times).
- A high proportion of embedded CDFs occurred within REPORT (32 occurrences), followed by DESCRIBE (17 occurrences).
- The CDF type which occurs the most frequently embedded is DFte (34 times), followed by EA (23 times).

These proposed relations, however, are conclusion drawn only based on the dataset analyzed in the context of this study. In order to make better empirically grounded assumptions with regard to relations between embedded CDFs and the CDF type they occur within, a larger dataset would be required.

5.2. Realizers of CDFs

The second research question of this thesis focuses on the people who perform the CDFs, also called realizers. Thereby, three realizers are taken into account: the teacher (T), the student (S), as well as a combination of the teacher and the student(s) (TS). In order to detect relations between each individual CDF type and the three realizers, two counts were performed:

- 1) CDF types across realizers
- 2) Realizers across CDF types

Furthermore, the proportion of realizers with regard to the three teachers was investigated along with an analysis of the realizers across the six lessons.

In order to obtain an overall impression of the proportion of CDF realizations by teachers and students, Figure 17 provides an overview of the percentage of all CDF passages performed by the realizers. Interestingly, CDFs realized by T are not drastically more often occurring than CDFs performed by S, which is quite beneficial for learning as one might assume that excessive and dominant teacher talk can impair the acquisition of speaking skills as it downgrades the student's role to that of the respondent and therefore limits their opportunities for learning (Darn 2007).

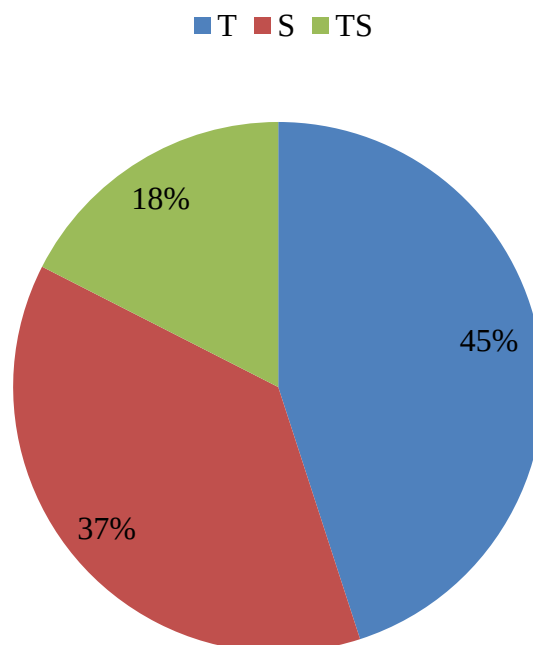


Figure 17 Distribution of all CDF occurrences across realizers in percent

These findings are quite contradicting to previous studies on the use of CDFs in the Austrian CLIL classroom, which revealed that CDF passages realized by students are extremely underrepresented, amounting to only six (Kröss 2014: 52) or seven (Hofmann & Hopf: 2015: 89) percent. Furthermore, in the context of this thesis, less than a fifth of all CDFs were realized in form of teacher-student interactions whereas Kröss' (2014) and Hofmann and Hopf's (2015) data show strong tendencies with regard to CDFs and TS realizations, amounting to remarkable fifty-nine percent (Kröss 2014: 52). However, considering that this teacher talking time is only limited to the use of cognitive discourse functions, it can be argued that the distribution of CDF realizations across the teacher and students is considerably balanced. Nonetheless, in order to understand the relations between each individual CDF type and their respective realizers, one need to take a Figures 18, 19, and 20.

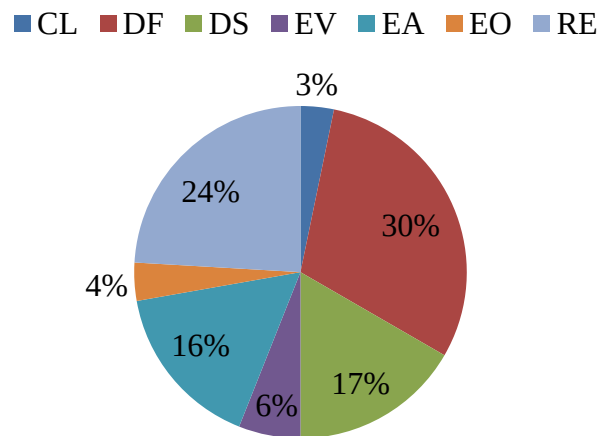


Figure 18 CDF types realized by T in percent

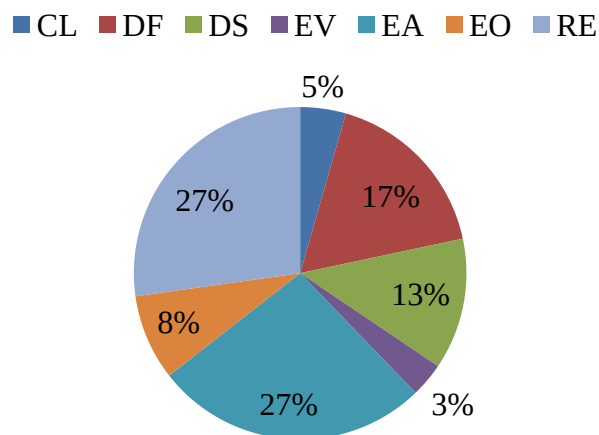


Figure 19 CDF types realized by S in percent

■ CL ■ DF ■ DS ■ EV ■ EA ■ EO ■ RE

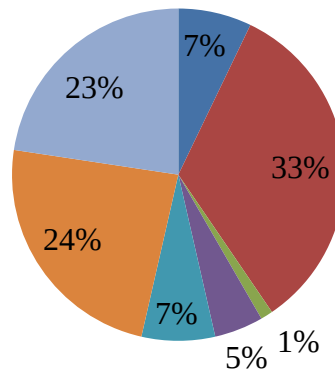


Figure 20 CDF types realized by TS in percent

When comparing Figures 18 to 20, one can see that there is no obvious general consistency with regard to the distribution of CDFs across the realizers. On the one hand, some CDF types show a similar percentage in all three realizer categories, such as REPORT, EVALUATE, and CLASSIFY, which only fluctuate around three to four percentage points. However, on the other hand DEFINE, DESCRIBE, EXPLAIN, and EXPLORE vary immensely across the three realizers. For instance, when looking at the students' realizations of CDFs, one can see that there are two front runners which, when combined, amount to half of all CDF occurrences performed by S: EXPLAIN and REPORT. These two CDFs seem to play a very dominant role with regard to the use of CDFs during student talk. The teachers, however, produce mostly definitions (30%), including translations, followed by reports (24%), descriptions (17 %) and explanations (16%). CDF types which were not frequently realized by T are CLASSIFY, EVALUATE, and EXPLORE. Interestingly, however, EXPLORE is one of the most reoccurring CDF type among teacher-student talk. When looking at further CDF realizations by both the teachers and the students, one can determine two more CDF types which were used significantly more often than the rest: DEFINE and REPORT. Thereby, the teacher and the student(s) co-create knowledge by working together on defining objects and summarizing as well as reporting previously learned information.

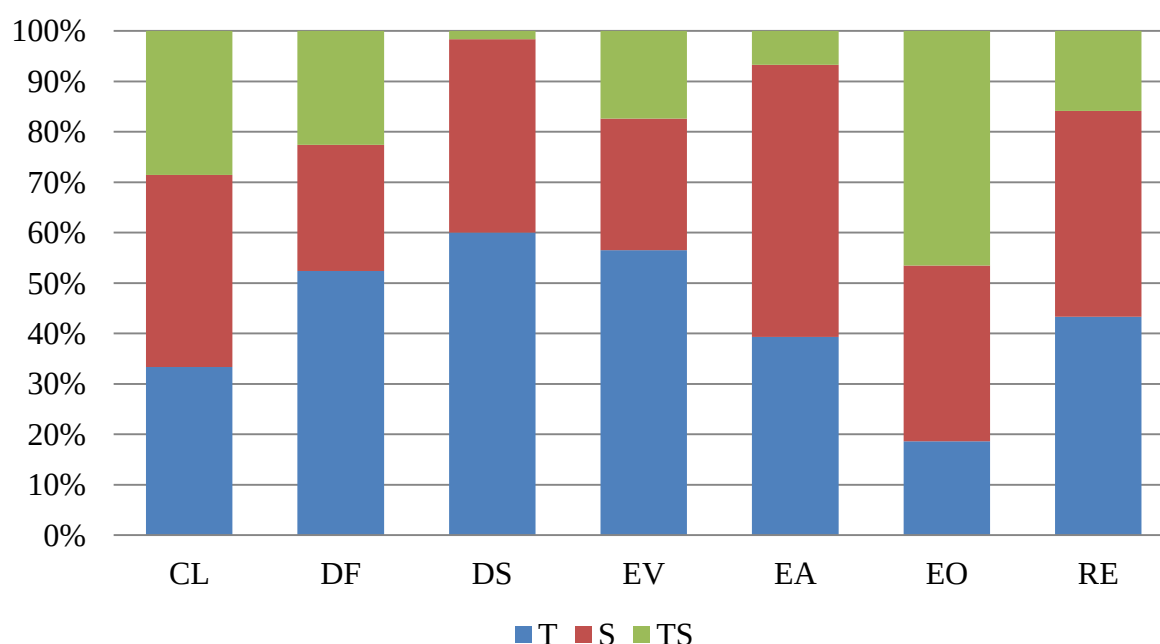


Figure 21 Realizers across CDF types in absolute percent

When looking at Figure 21, which displays the distribution of realizers across the seven CDF types, it becomes clear that CLASSIFY is the only CDF type whose proportions of realizers are somewhat evenly distributed. DESCRIBE, on the other hand, is a very teacher talk dominated CDF with barely any TS realizations. One CDF type which stands out for its high frequency of student realizations is EXPLAIN. As already mentioned before, EXPLAIN, along with REPORT, are the two most often realized CDF types with regard to students. Overall, however, with the exception of CLASSIFY as well as EXPLORE, which is TS dominated, the teacher remains the number one realizer.

After establishing relations between the realizers and the seven CDF types, the focus will now lie on the distribution of CDF realizers across lessons as well as the three teachers. As Figure 22 illustrates, the realization of CDFs varies with regard to their producer (T, S, or TS) across all six lessons. However, the frequency detected in L1 is similar to L2, which shows that the distribution of realizers is consistent with the teacher (Teacher A) and therefore probably teacher based. However, as L3 to L6 present diverse proportions, one can conclude that the distribution of realizers is lesson based with respect to Teacher B and Teacher C.

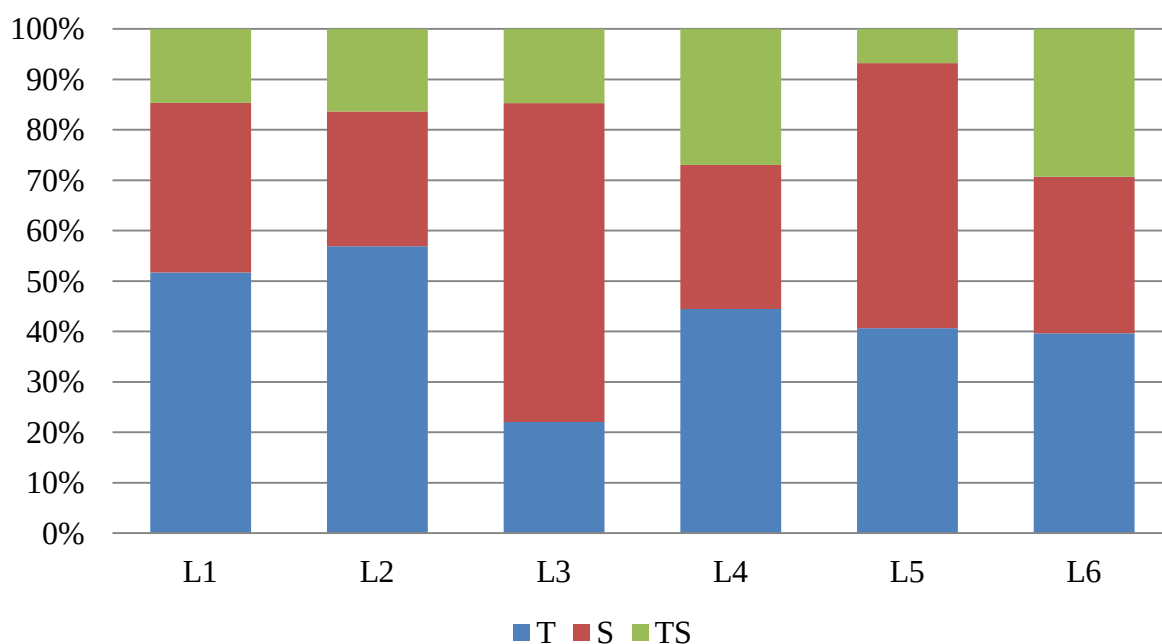


Figure 22 Distribution of realizers across lessons in percent

Furthermore, L2 shows the largest proportion of CDFs realized by the teacher, which is due to the fact that the lesson mostly consists of students reading out texts and questions while the teacher explains the texts, summarizes the information, and explores options. Therefore, when looking at the absolute number of CDF realizations across teachers (c.f. Table 19), one can see that the vast majority of CDFs realized in Teacher A's classroom are produced by the teacher, amounting to more than twice as many occurrences than S and TS realizations combined. Teacher B and Teacher C, on the other hand, show more CDF occurrences produced by the students than the teacher. Nevertheless, a bigger dataset including a greater variety of teachers would be required to make any generalizations and to draw conclusions, as the distribution of realizers is dependent on the nature of the lesson as well as the teachers themselves, including their teaching style, preference of activities, authority, etc.

Table 19 Distribution of CDFs across realizers and teachers

Realizer	Teacher A	Teacher B	Teacher C	TOTAL
T	126	43	47	216
S	70	61	49	180
TS	36	27	21	84
TOTAL	232	131	117	480

However, as the TS realizer was the least frequent producer of cognitive discourse functions, one can conclude that CDFs are mainly produced by individuals.

Considering that a more extensive database would be required for more strongly grounded generalizations, following conclusions are hypotheses based on the limited dataset of this study and cannot be mistaken for factual generalizations:

- TS is the least frequent realizer.
- EXPLORE is mostly realized by TS.
- The frequency of CLASSIFY is consistent with the realizer, meaning that all realizers produced a similar amount of classifications.
- DESCRIBE is mostly realized by T or S individually.

5.3. Interactional realization of CDFs

In order to see how the individual cognitive discourse functions were interactionally realized, one has to take a closer look at particular cases of CDF passages which occurred in the data. The following extracts were selected based on their representation of the respective CDF type, as well as high variety of CDF types, interesting features with respect to fuzzy borders, language, form, and meaning.

The following passage was selected due to its high density of teacher-student interaction as well as the variety of occurring CDF types.

Extract 4 Example of high teacher-student interaction and great variety of CDF types (L1)

01	T: now we had a homework that was mmh about the product life cycle. (.) Ina would you please tell me what is the first phase when a new product comes on to the market	RE TS
02	SX-f: er our homework was to explain what ina <un>xxx</un> earlier <un>xxx</un>	
03	T: and you had to complete the product life cycle in accordance to bwl erste oder zweite klasse	
04	Ina: at first there is an introduction <un>xxx</un>	
05	T: an introduction phase. what is going on in the introduction phase? (.) what is it?	DF TS
06	Ina: well you make erm <un>xxx</un> vermarkten you make a <un>xxx</un> for a product i think.	
07	T: it is the stage where a new product is launched on to the market (.) you have to mark it (.) you have to make advertising (.) you have to <un>xxx</un>=	
08	SX-f: =<un>xxx</un>=	
09	T: yeah you can take this paper I copied for you last week this one <un>xxx</un> what are the promotional activities (2) how can you promote a product when it's new. (.) when it's going to come new on the market. (.) when it's in the introduction phase. (.) was kann man tun wenn du jetzt ein produkt neu auf den markt bringen möchtest	
10	SX-f: ahm	

11	T: welche promotional activities welche werbemaßnahmen kannst du setzen.	DF S
12	SX-f: you can make questionnaires (.) you can make advertising for it	
13	T: would you think it's good to make a questionnaire when it starts, wouldnt you think it=	EV S
14	SX-f: =no the questionnaire is before to=	
15	T: =yeah=	
16	SX-f: =to know if you are (.) if you <un>xxx</un> the reception=	
17	T: =mhm=	
18	SX-f: =to that for that. (1) yes you can make advertise for it. (.) you can=	
19	T: =how how can you do advertising	DF S
20	SX-f: er erm <un>xxx</un> you can (1) erm posters hu	
21	T: mhm	
22	SX-m: you can offer free examples	
23	SS, T: <un>xxx</un>	
24	SX-m: in the streets and the supermarkets	
25	T: mhm have you ever tried free examples?	RE TS
26	SX-m: yes	
27	T: what	
28	SX-m: erm cheese	
29	T: yeah erm where do they offer it?	
30	SX-m: erm in the supermarket where they sell the cheese	
31	T: yeah	
32	SX-m: alright erm near the meat where most of the people are	
33	T: yeah do you know special supermarket (.) can you tell me where?	
34	SX-m: erm <un>xxx</un> (1) i think it was spar (.) im not quite (.) sure.	
35	T: mhm mhm=	
36	SX-f: my mother works in merkur and there they do it often and with bread also in their back shop they have all kinds of breads and they=	
37	T: =mhm=	
38	SX-f: they give it free examples for that	
80		

In this case, a longer passage was chosen in order to provide a better insight into the interactional realization of CDFs. Furthermore, this selected passage from L1 includes several unclear cases of assigning the correct CDF. The words and phrases highlighted in bold represent **cognitive discourse function markers** as they either directly consist of a member of a CDF category (i.e. identify, judge, report, etc.) or indirectly point towards a CDF (“*what is it?*”, “*do you think?*”, “*is it good?*”, etc.). Some CDF markers are very easily identified and show a direct relation to a CDF category, whereas some CDF passages lack in conclusive indicators, which could be the result of a ‘fuzzy border’ dilemma or inclusiveness of more than one CDF type. Extract 4 thereby serves as a great example of how the assignment of CDFs can be quite tricky in terms of DEFINE and CLASSIFY, as well as EVALUATE and EXPLAIN.

In the beginning of Extract 4, the teacher starts the lesson by revising the content of the homework (product life cycle), which had to be done by that day, as well as by asking a student to **tell** the class about the introduction phase. In this case, tell serves as a very clear CDF marker which can be categorized as a member of REPORT. Moreover, since the teacher and two students report the task which was assigned as homework and inform the class of the first phase of a product life cycle, it was coded as RE TS.

Subsequently, the teacher instructs the student to DEFINE the introduction phase by asking: “*what is it?*”, a CDF marker which clearly indicates the CDF type DEFINE. However, as the teacher sees that the student is not fully certain about its definition, the teacher provides the class with an appropriate definition. Since both the teacher and the student identified the introduction phase, this passage was labeled DF TS.

Before analyzing the subsequent CDFs occurring in Extract 4 in a chronological order, the instance of RE TS, which consists of lines 25 to 38, will be looked at. RE TS constitutes a very straightforward example of REPORT as the teacher and the students discuss their experiences with free examples in form of a narrating or recounting. Although the teacher didn’t use a direct CDF marker, such as report, the phrase “*have you ever*” guides towards a report of a personal experience.

Extract 4, however, includes multiple other CDF passages which seem less exclusive of each other. One example of such fuzzy borders is the CDF DF S (lines 19 to 23), as it is somewhat unclear, since more than one CDF, such as CLASSIFY, could be assigned to the passage. In reply to the teacher’s question, which promotional activities there are with regard to the introduction phase, the student both defines and classifies a questionnaire to be a form of promotional activity. However, as already stressed by Dalton-Puffer (2013: 236), the

construct is quite complex in its categorization of discourse functions and therefore results in fuzzy borders. Furthermore, Dalton-Puffer stresses that CLASSIFY “is always part of DEFINE” (236), as every process of defining involves some sort of classification in form of assigning the object to be a member of a certain category (Dalton-Puffer 2016: 7). As, in this case, the students are primarily asked to identify and name promotional activities, the passage is coded as DF S, considering that the cognitive process of classifying these activities in the category of ‘promotion’ is inclusive.

The same coding dilemma occurred within lines 19 to 22, which involves the teacher asking the students what ways of advertising they know. On the one hand, the students express ideas which they categorize under forms of advertisement (posters, free examples), on the other hand, however, they simultaneously identify, characterize, name and thereby DEFINE such items. Therefore, the passage is coded as DF S, keeping in mind that classifying is integrated in defining.

The CDF passage realized in lines 13 to 18 shows an even more complicated coding process, as the teacher asks the class whether a questionnaire is indeed a promotional activity in the introduction phase, encouraging the students to evaluate (“would you think it’s good”) the statement. However, the students did not only take a stance, but also provided an explanation for their opinion, which raises the question, whether EXPLAIN is part of EVALUATE, as **justifying** always requires someone to provide an explanation for their opinion. As discussed in section 3.2.1., evaluating requires the evaluator to have reasons for his or her position based on evidence which can be provided as well as by referring to prior knowledge (Dalton-Puffer 2016: 10). However, although every evaluation needs to be supported by appropriate reasons, it is not specifically stated in the construct that these reasons need to be stated in the process of evaluation. Yet, one could argue that an evaluation should always include an explanation as it shows that the student gave their opinion a lot of thought, intensifying the cognitive learning process.

This dilemma of the somewhat fuzzy border between EXPLAIN and EVALUATE can be found in multiple CDF passages occurring in the data (c.f. Extract 5 and Extract 6).

Extract 5 Example of a ‘fuzzy border’ (L2)

- | | | |
|----|--|------|
| 01 | T: now in your own opinion do you think (.) do you really think that parents know what their kids are doing just by calling them, | |
| 02 | Kerstin: no they can do this because the children can also say I’m with a friend and in real they are | EV S |
| 03 | T: and in= | |
| 04 | Kerstin: =in somewhere in reality they are somewhere else | |

Extract 5 shows a CDF passage which includes an evaluation of a situation (“*now in your opinion do you think*”) as well as an explanation (“*because*”) of the stance the student has taken. One CDF category which requires for one to involve their personal opinion the most is EVALUATE. However, as aforementioned, the borders between EVALUATE and EXPLAIN are not always clear and the categories can therefore not be treated exclusive of each other. In the case of Extract 5, the student Kerstin argues why that mobile parenting does not necessarily allow parents to control their children by using phones, as the children could simply lie to their parents with regard to where they are at. However, this passage rather consists of a combination of evaluation and explanation as the student primarily needs to decide whether they believe that mobile parenting really allows one to control their children, followed by the reasoning of their beliefs.

Extract 6 will now show that when students evaluate a matter without providing a reason why they took this stance, the teacher urges the students to justify their critiques by elaborating their position.

Extract 6 Example of EV realized by students (L5)

- | | | |
|----|--|-------|
| 01 | T: aah kommentar der anderen kurz zur präsentation , zum aufbau, zum ablauf, zum präsentationsverhalten | |
| 02 | SX-f: das war sehr gut | EVG S |
| 03 | SX-f: <3>gut</3> | |
| 04 | SX-f: <3>ja sehr gut</3> | |
| 05 | T: begründung? | |
| 06 | SX-f: weil FREI gesprochen war | EAG S |
| | | EVG T |

17	T: <un>xxx</un> a letter. people would write a letter yeah? (1) so? (1) the buyer (.) decides i will not take it. (2) what will happen?	EO TS
18	Claudia: eine lieferfri- (.) ah eine (.) annahmefrist (.) oder? na. (.) naja (.) oja=	
19	T: =na it's a possibility OF COURSE yes. (.) the seller could state a further period of time (.) hm?	
20	Claudia: mhm	
21	T: write to the buyer: please accept the goods until (1) <un>xxx</un> a staten (.) a certain date ja? (.) is also a possibility. (.) but (.) the buyer?	
22	Claudia: wills ned	
23	T: does not ACCEPT them	
24	Claudia: eine eine letzte (.) mahnung?	
25	T: no	

EXPLORE tends to be realized in an interactive conversation of the teacher and the students as in most cases the teacher introduces encourages the students to theorize about what could happen, what could be done, etc.

In lesson L6, students are asked by the teacher what possible options there are with regard to irregularities in fulfilling a contract of sale, such as if the buyer does not pay. Thereby, the students explore potential scenarios as well as respective consequences. In the first two CDF passages of EO S (lines 01 to 04 and 15 to 16), the teacher encourages the students to explore cases of unfulfilled contracts of sale whereas in EO TS (lines 17 to 25), the teacher gets involved in the process of hypothesizing.

One CDF occurrence which is somewhat unclear is line 17. To begin with, the teacher translates a previously mentioned term while retelling what has been said before. Therefore, it is questionable how this passage should be coded, as it is not as transparent as DFt in lines 05 to 09. Furthermore, the connection of DFt and RE can be located across all lessons with regard to teacher talk, as the teachers tend to translate certain terms or phrases when they summarize the information in order to make it the most understandable for the students, as can be seen in Extract 8.

Extract 8 Example of an RE and DFt connection (L4)

01	T: ja, also zahlen. es geht drum während (.) ah bei der (.) bei der produktivität die mengen im Vordergrund stehen, stehen da jetzt die zahlen, wirklich aufwand und ertrag, also income and expenditure (1) sind das wichtige	REG T
		DFte T

In Extract 8, the teacher explains to the students in form of a review what the essential aspects of ‘productivity’ are, translating these most important aspects in order to emphasize their significance.

Extract 9 shows a situation similar to Extract 8, as the teacher emphasizes important aspects of the maturity phase and saturation phase by also stating them in German, ensuring that the students grasp their relevancy.

Extract 9 Example of another RE and DFt connection (L1; abbreviated)

01	T: mhm good so er this was just the starting for er the starting of the life cycle product life cycle and the maturity phase <un>xxx</un> little bit more intensity about what you can do (.) first thing that it’s <un>xxx</un> to cover a little bit of everything but you should know what can you do what is possible in the maturity phase or in the saturation phase in der saturierungsphase oder reifephase. (.) either you can make cosmetic changes also nur das äußere ein bisschen verändern in der saturation phase you can make cosmetic changes die verpackung ein bisserl ändern die farbe ein bisserl ändern sonst nichts (1) you could change formulation die chemische zusammensetzung von irgendetwas [...]	RE T
		DFte T
		DFte T
		DFte T

In lesson L1 (c.f. Extract 9), the teacher summarizes what has been previously discussed and learned about the product life cycle’s individual phases. As the teacher retells the content to the class, she consistently includes translations intending to help improve students’ learning and understanding. As one can see from Extract 7 (L6), Extract 8 (L4) and Extract 9 (L1), all three teachers showed occurrences of RE which constitute summaries of subject matters while including translations of terminologies.

Judging from the analysis of passages extracted from all lessons, one can say that although all teachers show individual teaching styles and preferences with regard to cognitive classroom activities as well as dominance with respect to classroom talk, there are still specific features which can be detected across all teachers within the scope of the study and which potentially require attention for the further development of the CDF-construct:

- There is a certain ambiguity with regard to CLASSIFY and DEFINE, as classifying is always integrated in defining.
- There are lack of clarity as well as fuzzy borders with respect to EVALUATE and EXPLAIN, as most EVALUATIONS require a subsequent explanation of the statement, especially in the context of classroom talk.
- In the context of RE, where the teacher summarizes previously discussed subject matters, translations constitute frequently embedded CDFs in order to improve learning outcome.
- EXPLORE is mostly TS because teacher encourages students to hypothesize and explore unknown matters but stays involved in order to have a greater influence on guiding the students..

6. Conclusion

The purpose of this study has been to investigate Dalton-Puffer's construct of cognitive discourse functions in the specific context of Austrian upper-secondary CLIL Economics lessons. Thereby, the focus was primarily on the frequency and distribution of the seven CDF types, as well as their realizers and forms of interactional realization. Despite the quantitatively limited set of data, which consists of transcripts of six lessons, one could still detect tendencies, relations, and results. Considering that in order to develop more empirically grounded hypotheses and generalizations a significantly larger data scope would be required, the results and insights gained from this study do not only contribute to existing findings but also identify aspects of the construct which still need further improvement. The subsequent sections will initially present a summary of the main findings and finally suggest pedagogical implications of how the construct can contribute to the successful application of cognitive discourse functions in the context of CLIL.

6.1. Summary of main findings

Based on the data analyzed, cognitive discourse functions present a common feature of classroom talk as an average of 80 CDF passages occurred within every lesson, amounting to a total of 480 CDF realizations in the context of this study. As one lesson consists of 50 minutes, a minimum of three CDF passages occurred within every two minutes if equally distributed. L1 and L2 show the highest amount of CDF occurrences, each amounting to 116 CDFs, whereas L6, with a total of 58 CDF passages, represents the lesson with the least amount of CDF passages, equaling half the number of CDFs detected in L1 and L2.

Furthermore, all CDF codes which were established before the coding process were realized with the exception of CLGe, EVGe, and EOe. Overall, the data shows only few occurrences of embedded CDFs which were realized exclusively in German as the main CDF types were always significantly more frequently realized than their German or embedded members. Interestingly, however, the translational aspect of DEFINE, namely DEFINE-TRANSLATE, appears to be realized more often than its main type DF as it occurs more frequently than DEFINE itself. Moreover, embedded translations, coded as DFte, revealed to be very common in the context of this study.

When analyzing each CDF type, including all embedded and German CDFs, individually as well as in comparison, results show that DEFINE and REPORT are the most

prominent cognitive discourse functions, amounting to more than half of all CDF occurrences when combined. A little more than one fourth of all CDFs detected in the data are members of the CDF type DEFINE, equaling the total sum of all CDF occurrences related to the CDF types DESCRIBE, EVALUATE, and EXPLORE combined. These findings do not correlate with the ones published in previous studies, such as Kröss' (2014), which revealed that DESCRIBE is by far the most frequently realized CDF type, as well as Hofmann and Hopf's investigation of CDFs in the Austrian CLIL Biology classroom, which likewise showed that DESCRIBE is the predominant CDF type. In the context of this thesis, CLASSIFY is the least frequently realized CDF type and can be found among the most rarely realized CDF types within the scope of previous studies as well. This result contradicts what is stated in the construct, which describes CLASSIFY to be one of the core elements. As the analysis of each CDF type excluding its embedded and German members revealed quite similar outcomes, it can be concluded that the factors **German** and **embedding** do not have a statistically significant impact on the outcome of the results. Moreover, the study revealed that in the specific context of the data, CLASSIFY, DEFINE, and DESCRIBE are teacher based as the frequency of occurrences is consistent with the teacher, disregarding the realizers of the CDFs, whereas EVALUATE, EXPLAIN, EXPLORE, and REPORT are considered to be lesson based, as their distribution across the lessons is inconsistent with the teacher.

When looking at the two factors of language and embedding in more detail, a total of 74 German CDFs were detected within the data, which amounts to 15.1 percent of all cognitive discourse functions passages realized in the six lessons. Thereby, one can conclude that the English language plays a great role in the context of CDF realizations. Results show that most CDF passages which were exclusively realized in German are forms of reporting. Furthermore, the amount of German CDF passages per lesson reveals to be dependent on the nature of the lesson as well as the teacher's ELT qualifications. Moreover, students seem to be the majority of German CDF realizers, amounting to 51 percent, which is more than all T and TS realized German CDF occurrences combined.

With regard to embedded CDFs, of which a total of 82 occurrences were counted, amounting to 17.1 percent of all 480 CDF passages realized in the dataset, certain relations were detected, such as the tendency of embedded CDF passages within REPORT (32 instances) as well as DESCRIBE (17 instances). The most frequently embedded cognitive discourse function is DFte, which, with a total of 34 times, amounts to 39 percent of all embedded CDF codes, followed by EA (23 times). Thereby, DFte generally occurred with RE

(10 times) and DS (13 times) whereas EAe shows strong relations to RE (13 occurrences) and EO (6 occurrences).

With respect to the person who realizes the respective cognitive discourse function, the study revealed that most CDFs were realized by T (45%), however, not to a significantly greater extent than S (37%), which strongly contradicts previous studies' results showing that students only very rarely produce CDFs, amounting to approximately six to seven percent (Kröss 2014; Hofmann & Hopf 2015). TS, on the other hand, is the least frequent realizer of CDFs, with EXPLORE being the CDF type which was mostly realized by TS. Furthermore, results show that the frequency of CLASSIFY is consistent with the realizer, whereas DESCRIBE is primarily realized by either the teacher or the student, however not in combination.

The qualitative analysis of specifically selected passages drew attention to the problem of fuzzy borders as well as particular coding difficulties, as some CDF types are not exclusive of each other. This ambiguity is particularly problematic in the case of CLASSIFY and DEFINE, as classifying is generally integrated in the cognitive process of defining. Furthermore, coding issues occurred with regard to EVALUATE, as the majority of evaluations within the classroom require an explanation, which raises the question whether this justification of one's judgment includes explanations or whether these need to be accounted for separately. The specifically selected passages studied in the qualitative analysis reveal that there are always explanations following evaluations. However, if this is not the case then the teacher asks the students to provide reasons for their opinion. Furthermore, the analyzed data shows strong relations between instances of REPORT which constitute of summaries performed by the teacher as well as inclusive translations. Lastly, the CDF type EXPLORE was looked at in more detail, uncovering that it is mostly realized in form of teacher-student talk (TS) with the teacher acting as the encourager for students to hypothesize and explore new options or 'what-ifs.'

All results and insights gained from this study are however limited to the specific context of the six lessons and are therefore not to be mistaken as generalizations. In order to make more empirically grounded generalizations and statements, one would need to analyze a more comprehensive database.

6.2. Pedagogical implications and suggestions for future research

When keeping not only the results of this study but also the whole concept of cognitive discourse functions in mind, it can be concluded that the deliberate use of these functions within the context of CLIL classroom talk helps both teachers and students to communicate knowledge. In particular, the involvement of a high variety of CDF types should be prioritized in order to address multiple cognitive levels and actions. Regardless of the content or language, Dalton-Puffer's construct of cognitive discourse functions serves as a guideline for CLIL teachers to address various cognitive skills while strengthening language abilities through students' verbalizations of the respective CDFs.

Therefore, the teacher should be aware of finding a balance with respect to the realization of CDFs. Students' involvement in classroom talk is highly appreciated and crucial to language acquisition. Consequently, the students' role as producers of CDFs must be supported and encouraged.

Throughout the process of coding and analyzing the data, striking questions as well as interesting aspects of the construct which would require further research arose. Future studies could investigate whether the ELT qualification of the CLIL teacher influences the frequency and distribution of CDFs. Additionally, one could explore the use of CDFs across different age groups, examining if there are tendencies of more or less complex CDFs with regard to language ability and age. Moreover, as already introduced in this thesis, the role of *cognitive discourse function markers* and whether they can help simplify the coding process as well as unclear certain ambiguities can be investigated. Thereby, the CDF markers can be further developed into a pedagogical tool for teachers to raise their awareness of implementing Dalton-Puffer's proposed construct by operating within a "zone of convergence" of both pedagogies (2014: 216).

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8. Appendix

8.1. Abstract

In a globalized world where the knowledge of language has become a crucial necessity, the call for an educational reform with regard to foreign language teaching was very prominent in Europe. Over the past decade, Content and Language Integrated Learning (CLIL), which focuses on the integration of both language and subject pedagogies while aiming at an increased language input and thereby enhancing language learning, has received a considerable amount of attention and support in European schools and the educational sector. However, as there is no uniform requirement for CLIL teachers, some CLIL lessons are taught by solely subject teachers whereas others are taught by language teachers, resulting in teachers favoring either the language or content aspect of CLIL. In her article ‘A construct of cognitive discourse functions for conceptualizing content-language integration in CLIL and multilingual education’ Dalton-Puffer (2013) argues that this problem of unbalanced pedagogies could be solved “if a zone of convergence between content and language pedagogies” (216) was established, connecting the subject’s learning goals with “linguistic representations” (220). Thereby, she introduces so-called cognitive discourse functions (CDFs), which are verbalized cognitive processes and aim at supporting the communication of content-knowledge. This research paper studies the use of these cognitive discourse functions in the context of Austrian upper-secondary CLIL Economics lessons. In the context of this thesis, six lessons were coded based on Dalton-Puffer’s proposed construct as well as respective secondary literature and subsequently analyzed with regard to the frequency of each CDF type as well as the respective realizers. Furthermore, specifically selected passages were evaluated in terms of the meaning and forms of CDF realizations as well as the dilemma of “fuzzy borders” (236). Results revealed that CDFs constitute valuable tools for linking both pedagogies, as they are common features of CLIL classroom talk and are realized frequently throughout all lessons. All CDF types were realized by both teacher and students equally, however, the majority of CDF occurrences are related to REPORT and DEFINE whereas CLASSIFY and EVALUATE are significantly underrepresented. In order to ensure optimal cognitive learning outcome, it is suggested for educators to include a high variety of CDFs. Moreover, as the weighting of language and content pedagogies is very teacher-dependent, Dalton-Puffer’s construct serves as a tool and guide for educators to find a balance with

respect to communicating content-knowledge while addressing a broad range of cognitive thinking skills.

8.2. Zusammenfassung

In einer zunehmend globalisierten Welt, in der Fremdsprachenkenntnisse eine entscheidende Notwendigkeit geworden sind, wurde vor allem in Europa die Forderung nach einer Bildungsreform im Hinblick auf Fremdsprachenunterricht besonders stark. Im Laufe der letzten zehn Jahre wurde *Content and Language Integrated Learning* (CLIL), ein Unterrichtskonzept das die Integration der Sprach- und Fachpädagogik als auch eine damit verbundene erhöhte Auseinandersetzung mit Fremdsprachen anstrebt, von immer mehr europäischen Schulen und Bildungseinrichtungen befürwortet und praktiziert. Da es jedoch noch keine einheitliche Regelung in Bezug auf die Lehrkraftausbildung für CLIL LehrerInnen gibt und dadurch CLIL Fächer oft allein nur von FachlehrerInnen unterrichtet werden, entsteht ein Ungleichgewicht in Hinblick auf die Präferenz von entweder der Sprachen- oder Fachpädagogik. In ihrem Artikel ‘A construct of cognitive discourse functions for conceptualizing content-language integration in CLIL and multilingual education’ schlägt Dalton-Puffer (2013) vor, dass mit Hilfe von so-geannten *cognitive discourse functions* (CDFs) ein gemeinsamer Nenner beider Pädagogien gefunden werden kann indem mittels sprachlicher Repräsentationen Lernziele des Faches in Form von kognitiven Prozessen verbalisiert werden und dadurch die Kommunikation und der Erwerb von Fachwissen unterstützt wird. Diese Diplomarbeit untersucht die Anwendung dieser kognitiven Diskursfunktionen im Kontext von sechs österreichischen Wirtschaftsunterrichtseinheiten der Sekundarstufe II im Bezug auf Häufigkeit und Dominanz der einzelnen sieben Diskursfunktionentypen als auch deren Verfasser (LehrerIn, SchülerIn oder beide Parteien). Darüber hinaus wurde die interaktionelle Verwirklichung der CDFs in selektierten LehrerInnen-SchülerInnen-Gesprächen in Hinsicht auf Form und Inhalt als auch das Dilemma der so-geannten „fuzzy borders“ (Dalton-Puffer 2013: 236), unklare Abgrenzung der CDF Typen, untersucht. Die sechs Unterrichtseinheiten wurden transkribiert und basierend auf Dalton-Puffers Konzept sowie entsprechender Zusatzliteratur codiert und anschließend analysiert. Die Ergebnisse zeigten, dass die kognitiven Diskursfunktionen wertvolle Hilfsmittel für die erfolgreiche Verknüpfung beider pädagogischer Ansätze darstellen und von den SchülerInnen als auch den LehrerInnen regelmäßig in allen Unterrichtseinheiten realisiert wurden, wobei jedoch REPORT und DEFINE die am stärksten vertretenen CDF Typen sind

und CLASSIFY und EVALUATE unregelmäßig als auch selten auftreten. Um einen optimalen Lernerfolg zu gewährleisten, ist es empfehlenswert für Pädagogen eine breite Vielfalt von CDF Typen im Unterricht einzusetzen um somit ein großes Spektrum von kognitiven Denkfähigkeiten anzusprechen. Zusätzlich dient Dalton-Puffers Konstrukt als ein Leitfaden und Hilfsmittel für CLIL LehrerInnen um eine Balance zwischen beiden Didaktiken zu finden und damit weder den Aspekt der Sprache noch des Faches zu bevorzugen.