Grammar learners as hypertext users and usability informants: an empirical evaluation of the Chemnitz InternetGrammar

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To my family
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1. Introduction

Despite the Council of Europe’s promotion of multilingualism, there is one language most commonly used within Europe and across the world. Global colonization by the British Empire that began more than 200 years ago and the predominant world power of the United States of America in the second half of the 20th century have made English the language of global communication. According to the Council of Europe, English has “acquired the role of a lingua franca de facto” (Trim, 1997, p. 137), is one of the Council’s official languages (“How We Work,” n.d.), and is today considered a global language (Grzega, 2005), with an important role in university education. At the Chemnitz University of Technology (CUT), for example, the English language courses are obligatory for students of various study areas. There is thus a universal need for “life-long learning” of English in higher education (Crystal, 1997). The Council of Europe calls for an “intensification of language learning and teaching in member countries” to foster mobility and international communication (Trim, 1997, p. 137). According to the Common European Framework of Reference for Language Learning, Teaching and Assessment (CEFR), communicative competence comprises a linguistic component, a socio-linguistic component, and a pragmatic component (Trim, 1997, p. 141). This makes the learning of a second or foreign language a complex endeavor in which learners have to develop listening, speaking, reading, and writing skills, as well as, above all, vocabulary and grammar knowledge. In order to understand the process underlying the acquisition of a second or foreign language, various approaches have been developed in the last twenty years that have led to a complex set of terminology and theories.

Experts distinguish between second and foreign language learning by defining the latter as the acquisition of a language while staying in a country where it is spoken and the

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1 English language courses until the upper intermediate level are obligatory for all students enrolled in the “English Literature und Linguistics,” “Intercultural Communication,” and “Business Administration” programs at the CUT.
former as the learning of a language in the student’s home country. While foreign language learning can be, but is not necessarily, supported by language courses, second language learning takes place primarily in schools or other educational institutions in the learners’ home country and is the most common way for people to start learning a language (Gnutzmann, 2000). A few decades ago research clearly distinguished between “learning” and “acquisition” (Krashen, 1988). Nowadays, researchers use the terms learning and acquisition interchangeably (see Ellis, 1994; Doughty & Long, 2003b; Gass & Selinker, 2008). In this study, I will use the term “second language acquisition” for the language learning relevant to this study and “learning” and “acquisition” interchangeably.

The research field of second language acquisition has existed for more than forty years (Gass & Selinker, 2008), in which time its theoretical foundation, methodology, and aims have become increasingly interdisciplinary. Research designs in the field often derive theories and methods from the parent disciplines of linguistics and applied linguistics as well as from various other academic disciplines such as psychology, sociology, and education (Henrici & Riemer, 2003). The way learning and study results are viewed by researchers depends very much on the different underlying theoretical and methodological principles.

This study investigates a freely available English grammar program, the Chemnitz InternetGrammar (CING), designed at the CUT Institute of English Linguistics. The CING is a web-based, hypertext, self-instruction grammar of English for German students. The study is situated within the research fields of applied linguistics and second language acquisition, as well as computer-assisted and autonomous language learning.
1.1 Research Background

“Languages are social” and human beings “use language to communicate” (Saville-Troike, 2005, p. 32) in that they use particular patterns and regularities to “convey meaning” (Cook, 2008, p. 19). In order to understand this communication, it is crucial to comprehend and correctly use the patterns and regularities of the structured rule system that governs the correspondence between form and meaning. This system is the grammar of a language. Knowledge of grammar is considered by many linguists to be a central area of the language system that connects other parts of language like vocabulary and pronunciation (Cook, 2008, p. 20). Grammar instruction plays a crucial role in language learning (Engel & Myles, 1996), as it enables learners to understand the way a language works in communication (Halliday, 2005). Regardless of the learners’ language level, successful language acquisition usually involves grammar instruction, and instructed learners display higher levels of grammatical accuracy in their production of the foreign language than learners who did not receive specific grammar instruction (Gass & Selinker, 2008). To cope with the growing demand of instruction materials in English and aid the various courses of English as a foreign language at the CUT a web-based grammar of English, the Chemnitz InternetGrammar was developed. It has a hypertext structure and its own unique approach to grammar material presentation.

The Internet has turned information into a common good, subject every day to update, amendment, and expansion (c.f. Braun and Kohn, 2005). Scholars call today’s society information society or knowledge society (Rüschhoff, 1999; Braun and Kohn, 2005) in that it presents an ever increasing knowledge base that is no longer made up of clearly defined disciplines, but rather of “transdisciplinary bodies of knowledge and relationships” (Costa and Liebman, 1995, p. 23). The acquisition of this transdisciplinary knowledge requires forms of
learning other than pre-set curricula. Instead, individual learning needs are becoming more and more important in the learning of information and languages alike (ibid.).

The increasing accessibility of computer technology to a wide population and the integration of the Internet have also had a considerable influence on education, including second-language acquisition. The pedagogical potential of computer technology in language learning has been widely discussed over the years (Levy, 2000; Chapelle, 2003; Felix, 2003; Pfeiffer, 2005; Davies, 2007). When computer technology is involved in language teaching or learning, it is called Computer Assisted Language Learning (CALL) (Warschauer & Healey, 1998). Today researchers also use the term “e-learning” to refer to software-assisted or Internet-based learning (Baumgartner, Häfele and Maier-Häfele, 2002, p. 15) and various types of e-learning environments have been developed (Chapelle, 2003). While early CALL programs were accessible only to a select group of researchers (Friesen, 2009, p. vii), they have since become a common form of language teaching across the world.

The comprehensive description of language forms and their meaning is one focus of grammar books, while another is to clarify and explain the often complex rule systems. The Chemnitz InternetGrammar (CING) is a computer-assisted grammar learning environment and a web-based self-instruction tool for English grammar acquisition. It was designed and developed at the CUT department of English Language and Linguistics as part of the interdisciplinary research project “Neue Medien im Alltag” (Boehnke et al., 1999). The project’s aim was to investigate empirically what users do in the actual application of technology and to collect, analyze, and interpret research data on computer applications in language learning and beyond (Boehnke et al., 1999, p. 912). The research team consisted of

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2 This project was funded by the Deutsche Forschungsgesellschaft (DFG) 1999-2003 and work that this PhD thesis is based on was part of the original project.
scholars from the Humanities, the Social Sciences, and Psychology, as well as a group of
English linguists (including the author beginning in 2002).

At the beginning of the CING project, in 1999, the field of English grammar was
dominated by grammar books such as Greenbaum (1996) and Biber et al. (1999). These
works, like the CING, have a sentence-based presentation of grammar rules in that sentences
provide examples for the individual rules. They also provide vast bodies of rule material, but
lack authentic language content, opportunities for practice, or the possibility of comparative
analysis of foreign and mother-tongue structures. These aspects make them without doubt
useful tools for the practice or confirmation of grammar rules and structures by intermediate
and advanced learners of English or students of linguistics. Nevertheless, the grammars fail to
support the development of the reader’s “feel” for the language, an intuition for the
appropriate usage of grammar patterns in real communication (Schmied, 2004, p. 102). and
rarely offer a means of the so necessary testing of hypothesis of grammar structures and rules
via receptive and productive tasks (Fandrych, 2010, p. 1013).³ Exercises that use and analyze
authentic language examples are crucial to an understanding of the grammatical structures and
meanings in native language usage. These considerations gave rise to the idea of a
comprehensive grammar tool that integrates authentic language materials and exercises with a
feedback-option into a single e-learning environment, with hypertext reflecting the important
interrelation between structure and meaning. This content structure was to provide an
alternative to linear grammar books by highlighting ways in which structures and meanings of
a language interrelate in the reality of communication.

Similar to traditional grammar books, especially reference books like Greenbaum
(1996), the CING lacks an instructor and is meant to be used as a self-instruction tool. In
contrast to grammar books, its rule material is organized in a hypertext structure and
presented in two ways: Explanation and Discovery which contain different pedagogic aids to

³ I use the terms grammar book “readers” and grammar book “users” interchangeably.
help using the material. The *Explanation* pages present extensive grammar rules, often supported by models and graphs, with corresponding authentic language examples allowing learners to see the rule applied in authentic language. The *Discovery* pages contain sets of selected language examples followed by grammar comprehension exercises. These exercises contain different statements about the presented grammar structure, some of which are not entirely correct. Learners have to choose the correct statement, which is meant to help them discover the rules by interacting with authentic language. This twofold presentation is referred to as the *Dual Approach* (Schmied, 1999a) and accounts for the unique approach the program offers to grammar learning. The CING also contains *Exercise* pages with multiple-choice and gap-fill exercises that allow learners to practice their knowledge. The different kinds of exercises in the CING, including those in the *Explanation* and *Discovery* material, provide some minimal feedback (i.e., correct/incorrect). Ways in which these unique aspects of the CING’s grammar material support different goals e.g. ‘process and product grammar learning’ (see Schmied 1999a) can be of interest to learners, teachers, and researchers alike. Thus another aspect that characterizes the CING, and many other grammar books, is the distinction between its application as a research grammar (*Forschungsgrammatik*) which may also include its application as a reference grammar by a teacher and a user grammar for learners (*Service Grammar*) in the form of an instructional tool. Finally, the CING contains a *Corpus Search* tool that provides access to a comparative corpus of authentic English language examples with German translation. This corpus allows students and researchers to investigate differences between English and German grammar usage.

The CING represents an e-learning environment that is meant to be used autonomously. Like other forms of learning in the information society, learning with the CING requires a range of learning behaviors (Rouet, 1992; Jonassen, 1993; Jacobson & Spiro, 1994) and strategies (Schnotz & Zink, 2001) to meet the demands of hypertext-based learning
material and avoid disorientation (Conklin, 1987; Kuhlen, 1991; Gerdes, 1997). Learning behavior with the CING has not yet been investigated, while the need for evaluations and research into CALL’s research methodologies remains as current as ever (Cameron, 1999; Chapelle, 1999, 2003; Levy, 2000; Egbert & Petrie, 2006; Davies, 2007). Jakobs and Lehnen (2005) argue that users’ expectations of and strategies with a hypertext learning tool can best be analyzed with empirical study designs involving criteria-guided comparisons of hypertext types. This study follows their example and combines empirical studies with user interviews and tests to establish usage patterns and strategies.

All of these aspects of the CING make it a unique English grammar tool. Its multi-disciplinary design requires a similarly complex research design to study and evaluate it.

### 1.2 Outline of the investigation

In order to understand if and in what ways the CING actually helps learners of English learn grammar, the tool must be investigated by means of a research design that is informed by the theory and methodology of SLA, grammar learning and research, and CALL. Empirical research can provide hard data on learner performance while qualitative research methods offer insight into learners’ experience with the program and reasons for certain behaviors. Only an interdisciplinary research design can provide the answers the multi-dimensional field of SLA requires (Henrici, 2000).

My study presents this theoretical background in two parts. Chapter 2 provides a survey of linguistic concepts of grammar related to the CING and its application as a research or user grammar with a *Dual Approach* to material presentation. Chapter 3 then discusses theories of SLA, CALL, and autonomous learning. Taken together, these two components cover the theory that informed my research methodology.
The development and implementation of this research methodology is presented in chapter 4 along with the data results. Chapter 5 analyzes these results and reconnects them to the theory in order to assess the CING’s performance as a self-learning grammar tool. Chapter 6 concludes the study with a proposed model of integrating the CING into a blended learning context.

1.3 Scope of the Thesis

On the applied side, the study comprises the preliminary study results with the CING, empirical questionnaires on learning success with the program, qualitative questionnaires on learners’ CING usage, and learner interviews after their first encounter with the CING. The theoretical side includes a discussion of the role grammar has in linguistics and applied linguistics. Grammatical concepts seen from a linguistic and an applied linguistic viewpoint will be discussed. Criteria that render it possible to specify a grammar as a particular type of grammar description will be introduced and applied to the CING. The type of grammar description and grammatical concept of the CING will then be presented and the theoretical model of autonomous learning that informed my observation and questionnaire categories will be introduced.

The study’s multi-disciplinary research design divides research data into empirical, qualitative, and theoretical in order to reflect the CING’s complex learning environment when used by intermediate-level students of English. Apart from linguistics, second language acquisition and autonomous CALL, this design is informed by Nielsen’s approach to studies of web usability (Rohrer, 2008), visualized by Rohrer (Figure 1), and is comparable to the approach by Jacobs and Lehnen who also involve a user and usage test (Nutzertest, Jakobs & Lehnen, 2005, p. 174).
Further theoretical discussion on controlled applications of the CING in promising theoretical models (e.g. “activity theory” see Blin, 2005; blended learning see Kohn, 2006, 2007 and Günther, 2006) exceeds the scope of this evaluation and will only be addressed briefly in the future outlook to this study (see chapter 6).
2. Grammar and the CING: concepts and descriptions

The debate about “grammar” is very old. Modern approaches distinguish between theoretical models and their applications to language acquisition and grammar writing. Additionally, it is not always clear how grammar books approach these questions.

According to Helbig’s (1993), the east German specialist for the grammar of German, the term grammar has three definitions:

- **Grammar A**: the underlying rule system of a language, independent of the linguists description or the speaker’s competence in using it
- **Grammar B**: the description of the underlying rule system of a language by the linguist
- **Grammar C**: the rule system the speaker has internalized (his “subjective grammar”) which is the basis for his successful language behavior (ibid, p. 21, translated by the author)

While **Grammar A** and **Grammar C** see grammar as an abstract structure that underlies language (**Grammar A**) or a speaker’s language production/reception (**Grammar C**), **Grammar B** is an actual description of the underlying rule system. This rule system is the basis on which grammars that are developed for learning purposes and/or as reference works (e.g., Quirk et al., 1985; Biber et al., 1999).

In contrast to Helbig, Storch (2009) distinguishes 4 definitions of grammar. First, there is the grammar that is the immanent, but abstract system of the statements of a linguistic community (‘langue’ [see Saussure, 1983]), second, there is the grammar that is the grammar in the mind (‘mentale Grammatik’, translated by the author) that underlies a speaker’s language behavior (‘competence’, translated by the author). Storch’s third definition of grammar is the “linguistic description of language structures” or a “theory of a particular language” and the fourth definition is grammar as a grammar book that is the result of the description of a language (see Storch, 2009, p. 74). Like Helbig, Storch distinguishes between grammars that exist as an abstract structure internalized in the speaker’s mind or by a community of speakers of one language (Helbig: **Grammar A** and **C**; Storch: first and second definition) and grammars that record the linguistic structures in order for learners and linguists to read up on or confirm particular grammar rules (Helbig: **Grammar B**; Storch: third and fourth definition). Relevant to this discussion is only the definition of grammar as a linguistic description of a language.
2.1 Concepts of grammar, grammar learning, and the CING

Grammars, meaning the written presentation of the linguistic system of a language, have meant “different things to different users at different times and in different places” (Linn, 2008). They are often influenced by linguistic theory and the needs of a language community. As a result, many grammars differ in content and presentation. Some grammars focus exclusively on the core areas of linguistics: Morphology and Syntax, while others also include Phonology, Semantics and sometimes even Pragmatics in their description of a language. The scope of linguistic content that a grammar displays is often decided by the linguistic theory on basis of which the grammar was constructed. This underlying linguistic theory is an abstract version of linguistic description and can inform the way written grammar is presented, rules are described and examples are combined with rules or in exercises, but it does not answer questions about the role a grammar plays in language acquisition.

How do learners use this grammar material which has been informed by linguistic theory? How are grammars applied in language teaching or a course syllabus? In the area of SLA, for example, grammars act as mediation devices between linguistic research and the learning and practice of the foreign language, regardless if used as reference work or as teaching material (see Hennig, 2001, p. 41). To understand how this mediation works, the applied linguistic aspects of grammars have to be looked at and the different criteria “relevant to the conceptualization of [a] grammar” (Thurmair, 2003, p. 294) need to be analyzed.

Mindt (2000) writes in the introduction to his empirical grammar: “This grammar uses a new approach to English. It is based on authentic English. [...] The grammar is learner and teacher oriented” (ibid., p. 6). While the content (authentic language examples) and target group (learner and teacher) are clear, the goals, structure and usage of his grammar and the following questions remain unclear to the user. What does it mean to approach a language via a learner and teacher oriented grammar? How does a grammar’s teacher and learner orientation present themselves in the material presentation and design? What are the linguistic foundations of the grammar and how do they inform its content? What are the merits of authentic language examples?

After an introduction of the various concepts of grammar, I will discuss goals, target groups, types of grammar content and forms of presentation as well as different usages of a
grammar. This clarification of terminology will make it easier to conceptualize the CING in relation to linguistics and language learning.

**Grammar**

“Grammar is conventionally seen as the study of the syntax and morphology of sentences” and of what forms are possible in a language (Thornbury, 2010, p. 2–3). Linguistics is the scientific study of human languages via grammar and of the meaning grammatical forms can have. Its core area is grammar (see Cook, 1989).

Since the beginning of modern linguistics in the early 20th century (Zimmermann, 2003, p. 20), various theories of linguistics emerged and offered different views on the aspects of human language. These views also influenced the different concepts of grammar that have been developed over the years. With the advent of SLA around 40 to 50 years ago (Gass & Selinker, 2008, p. 1) the aspects of human language and concepts of grammar were further investigated and integrated into models of language learning. For this reason, a description of a grammar needs to include a “language form and structure”-point of view, a “school of linguistics”-viewpoint as well as a discussion of a grammar's role in learning and the learning model, if there is one. This way, the description of grammar in linguistic structures, the understanding of grammar in light of relevant theories of linguistics (e.g. Structural, Functional and Cognitive Linguistics) and the definition of the language learning model, of which a grammar is part, make for a full understanding of the potential of a grammar in linguistic and SLA terms (see Sampson, 1980).

Applied Linguistics is an important part of this discussion, as it forms the link between theories of linguistics and SLA. It applies “theoretical linguistic to actual data” meaning real life language, and investigates the results for linguistics, as well as SLA (Cook, n.d).
2.1.1 Modern linguistics and grammar

The two approaches to language and grammar description are the prescriptive or descriptive approach (Greenbaum, 1996). Descriptive linguistics, or “descriptivism”, describes real life language and aims at adapting the linguistic models to the development of real language usage. Prescriptive linguistics, or “prescriptivism”, takes models of language and its structure and considers them as correct representations of a language and compares them against real-life spoken and written language. Any structure that does not comply with the model is rejected as incorrect language. In this way prescriptive grammars prescribe how language structures are to be used. Descriptive grammars offer a comprehensive description of which structures occur in real-life language and recognise that language changes over time (e.g., Biber et al., 2002; Huddleston & Pullum, 2002, p. 7). The language examples these two approaches use to present rules differ considerably. Prescriptivistic grammars present artificially formed, grammatically correct examples to represent rules. Descriptive grammars, on the other hand, present actual usage of structures by native speakers (and writers) “in large numbers of spoken and written texts” (Carter & McCarthy, 2006, p. 6).

Many grammars present a combined approach of prescriptive and descriptive grammar description in order to avoid hyper-correction and to be able to abstract errors that native speakers make (Huddleston & Puddlum, 2002, p. 5). Therefore, descriptive grammarians refer to real language examples and to prescriptive grammar rules to “cover informal as well as formal style” (ibid.) in language production. This aids their aim of a grammar description that presents a “grammar of general-purpose, present-day [and] international standard” (ibid., p. 2).

The goal of prescriptive grammar description is to keep speakers of a language from using ungrammatical structures in their speech or writing and it never treats all possible variations of a natural language. Descriptive grammar intents to treat the different linguistic variations that occur in native speakers’ language production in so far as acceptable as the language community considers them acceptable (e.g. in that it uses the variations interchangeably). Speakers of a language are usually aware of prescriptive rules in that they experienced the rules being taught at school. These rules are not always followed by a language community but are continuously used by a language community, but speakers are often not consciously aware of them.
2.1.2 Modern schools of linguistics

The history of linguistics has seen many different linguistic approaches but two movements in particular were very influential in the development of the concept of language (What are the structures of a language?) and the scope of its application (What aspects of language are related to its investigation?): the functional and the generative approach to linguistics.\(^4\) I will begin with the functional approach to linguistics and continue with the discussion of one of the most influential developments in linguistics: The generative approach.

*Functional systemic linguistics*

In functional linguistics language is defined as a “systematic resource” and linguistic description prioritizes the system rather than structure (Halliday, 1994) which is why it is often called 'Functional Systemic Linguistics'. Halliday, the main follower and supporter of modern functional linguistics, considers the theory of language as “essentially consumer oriented” (c.f. Chapelle, 1998b). The linguistic structures that occur in language are used to express a particular meaning necessary in a context and in that they combine syntax, lexicon and morphology (ibid.). Linguistic structures are indeterminate in number whereas the ways in that they are combined can be described by a combination of syntax, lexicon and morphology with the interacting aspects of situational context. Halliday calls these aspects “field, tenor, and mode” (ibid.) and believes that every speaker uses these aspects to process the non-linguistic information included in communication. 'Field' is the topic or action, while 'tenor' is represented by the social roles and relationships between speakers and 'mode' means the way of communicating (dialogic/monologic, spoken/written).

In that way the analysis on the linguistic level is related to the information of the context of social interaction and focuses on the linguistic choices language speakers make in a given context.

As in Structuralism, the organising and analysing of the different choices is made on different levels of language. The basic levels in the Functional Approach, also called strata, are semantic, lexico-grammatical, phonological and context (represented by field, tenor and

\(^4\) Other approaches to linguistics also provided noteworthy models of grammar, the object of this study is the CING, which presents grammar in relation to meaning and for discovery. This involves aspects of grammar presentation and discussion relevant to the selected approaches.
These strata appear similar to the linguistic levels used in structuralism, but go much further in meaning and application. For example, 'lexico-grammar' is the syntactic organisation of words into utterances while the functional analysis of the utterance includes the categories actor, mood, agent etc. (for a full description see Halliday, 1994). The functional approach to semantics is similarly extensive and focuses on meaning in that the semantic strata are investigated according to ideational semantics (propositional content), interpersonal semantics (e.g., speech-function, expression of attitude) and textual semantics (message structure: rhetorical structure, new/given topic structure). In specific linguistic analyses these strata need to be extended. A case where register variation is investigated, for example, will need a level of investigation (strata) above the semantic (see Chapelle, 1998b) to understand the linguistic choices and contextual meanings. In that way, language is always investigated with a view to its meaning which is believed to be enhanced or constrained by social context.

Functional Systemic Grammar

The way the functional approach applies a metalinguistic approach to the linguistic analysis of language, the grammar model of this linguistic approach is similarly focused on how human beings say things (Thompson, 1996, p. 36).

Grammars in the functional approach can be described as “the set of linguistic resources available to us for making meanings” (ibid.) based on our own situation of context and culture (see also Miller, 2004, p. 8). All rules need to be explained in terms of their functionality in the ways they are used (Thompson, 1996, p. 4). This includes a look at the socio-semiotic aspect of language in that it can carry social values of communication and is part of human culture (Halliday & Hassan, 1989, p. 4). This can best be illustrated with the following model (see Figure 2).
With strata and aspects of context (field, tenor and mode) the functional approach to grammar analyses and categorises structures and their meaning in the investigated text linguistically and extra-linguistically, as the Figure 3 shows.
What is missing from this model is syntactic information. It is instrumental to semantic information and semantic information is instrumental to pragmatic information in actual verbal interaction. Pragmatics is the overall framework with which functional analysis works to combine structures with meaning and function (Thompson, 1996, p. 10).

Linguistic analysis and description in the functional approach is far more complex than in a structural approach, due to the involvement of contextual and cultural information. The variations in context are categorized in different “registers”. An analysis of text that begins with the register is called a Top-Down Analysis. It aims to confirm predicted information received from the register analysis in the analysis of the text (field, tenor and mode). This text analysis looks at the relations between words, phrases and sentences via

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5 The Bottom-Up approach begins with the textual analysis and finishes with the analysis of register (for a more detailed description see Miller, 2004).
lexico-grammatical connections. For examples, the relation between two sentences that are connected through *and* is not as direct as the relations established by *That is to say*. That example only shows how semantic relations are investigated, but functional analysis stretches from interpersonal meanings to intensive investigations of textual meanings.

From a functional approach that directly relates meaning and structure, I come to a theory of linguistics that is less concerned with function but with the generative power of a speakers' grammar knowledge.

*Generative linguistics*

The studies of English grammars until the 1960's were mainly descriptive and language data-oriented in nature and the large majority of grammars was written that way. Language, at the time, was considered a system of structures on various linguistic levels that a language community shares.

Noam Chomsky, an American linguist and cognitive scientist, refreshed the area of linguistic theory by introducing a theory-oriented approach to language description. His approach follows an understanding of language not only as a structural system shared by a language community, but also as knowledge native speakers own to communicate and express their needs and ideas. This concept of linguistics was new, different from everything known at the time and it has affected grammar description ever since (see Linn, A. 2008, p. 84).

Chomsky's idea stands in stark contrast to the traditional view that grammars are based on a structural analysis of a language system and that speakers just have to acquire and reproduce every aspect of the same to communicate successfully. He argues that linguists need to understand the competence of a native speaker rather than the language properties. This competence is made of the speaker's intuition and his knowledge that enables native speakers to produce, understand, and judge an indefinite number of sentences (Delahunty & Garvey, 1994, p. 281). In order to be a competent speaker one needs to know the complex intricacies of everything related to a grammar from phonology and morphology to word-formation and sentence-formation. Generative linguists also call this knowledge 'universal grammar'. It is reflected in the “richness of structure of language” (Chomsky, 1964, p. 27) that includes knowledge of the phonology (pronunciation), morphology (word-formation) and syntax (sentence-formation). All this combined with the knowledge of words (lexicon) sets the basis for a speaker's speech. Chomsky divides these properties of speech, into knowledge
of language (rules) he termed 'competence' and the use of language in actual communication and different situations 'performance' (Chomsky, 1965). This distinction enables the linguist to correctly assign the properties of speech to the two concepts. These help to exclude factors of speech production (hesitation, slip of the tongue) from analysis of a language's universals, because they are unrelated to the native speaker's knowledge of grammar.

Chomsky also refuses the language specific approach to linguistic analysis in that he developed a linguistic theory of grammar applicable to all languages (see Delahunty & Garvey, 1994, p. 281). In one of his first publications he says

“…linguists must be concerned with the problem of determining the fundamental underlying properties of successful grammars. The ultimate outcome of these investigations should be a theory of linguistic structure in which the descriptive devices utilized in particular grammars are presented and studied abstractly with no specific reference to particular languages” (Chomsky, 1957, p. 11).

Before, American structuralists, who aimed for a well-defined system of language, were incapable of postulating a sharp dichotomy of the language system (langue) and the spoken language (parole) based on their “observationally graded data” (c.f. Newmeyer, 1996, p. 25). As a result, Chomsky saw the task of linguistic research of his time to generate “formalized grammars” (see ibid.) to “bring to light the formal patterns underlying the sentences of a language, and to show how these observed regularities might account for particular decisions” about the grammaticality and meaning of sequences of language (Chomsky, 1975, p. 6). These regularities (formal patterns) are relevant to all human languages and therefore help to cater better for a language independent description of language structures.

**Generative and Generative-Transformational Grammar**

A grammar is to represent the linguistic structures all human languages have in common and how they can be combined creatively. However, it cannot explain how humans are able to create combinations of linguistic structures they might not have experienced before. The time we have available to learn our very first language is a short period of our childhood. In this
period it is unlikely that the input\(^6\) we receive provides us with all existing linguistic structures and combinations. However, already at the age of 6 we are able to build sentences that we have not heard before. Chomsky explains this ability with an innate predisposition particular to humans (as animals do not acquire language, even if presented from a young age with extensive language input), the \textit{faculté de langue} \cite{Chomsky1964, p. 26} or Language Acquisition Device (LAD) \cite{Chomsky1965}. Related to this idea of LAD, Chomsky envisaged a grammar that reflects the human ability to generate creatively countless instances of language by presenting linguistic universals that apply to all human languages: a Generative Grammar.

This is not the internalised grammar a native speaker carries, resulting from what in generative linguistics is called 'I-language', but I discuss its counterpart 'E-language' which “studies a collection of data separate from the speaker's mind” and “describes the regularities and patterns found in the collection” \cite[p. 3]{Cook1989}.

Regarding the scope of linguistic levels, Chomsky considered phonological and morphological systems in his new approach to grammar \cite{Chomsky1975} and built formalized rules to reflect structures in an abstract way for each linguistic level. To illustrate this, I will give an example of a generative formalized rule for English at the linguistic level of morphology \cite[p. 113–6]{Chomsky1975}. According to Chomsky it is unnecessary to associate each morpheme with a set of phoneme strings\(^7\) and their conditions of occurrence. Instead he suggests translating individual morphemes into strings of invented elements (which he calls 'morphophonemes') to reduce the number of statements of phonemic forms represented by the morphophonemes in various contexts. Thus, he claims, “many conversions of morphemes into phonemic representation” can be determined \cite[p. 115]{Chomsky1975}. How this applies to actual analysis, can be shown with the phonetic changes in the English plural morphemes which have the following rules:

\begin{align*}
\text{A} & \quad \text{a)} \quad \text{wife} \overset{\text{pl}}{\rightarrow} /\text{waywl}^{\sim}\text{pl} & \quad \text{(ultimately, “wives”)} \\
& \quad \text{b)} \quad \text{wife}^{\sim}X \overset{\rightarrow}{\rightarrow} /\text{wayf}^{\sim}X & \quad \text{(where } X \neq \text{ pl)} \\
\text{B} & \quad \text{a)} \quad \text{knife} \overset{\text{pf}}{\rightarrow} /\text{nayv}^{\sim}\text{pl} & \quad \text{(ultimately, “knives”)} \\
& \quad \text{b)} \quad \text{knife}^{\sim}X \overset{\rightarrow}{\rightarrow} /\text{nayf}^{\sim}X & \quad \text{(where } X \neq \text{ pl)}
\end{align*}

\(^6\) Input stands for language that is spoken to us, that we hear and possibly understand.

\(^7\) ‘Strings’ are the elements of a system often organised in a certain order and in structural analyses of phonemes these strings are called ‘allomorphes’ \cite[p. 114]{Chomsky1975}. 

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Pl stands for the plural morpheme, / … / shows the phonemic representations of the words and X stands for any kind of structure that is not an English plural morpheme. A, B and C show in detail how the phonetic changes affect pronunciation of the plural nouns. In Chomsky's simpler approach to the description the morphemes are converted into morphophonemes in the following way:

D  wife >  w  a  y  F
E  knife >  n  a  y  F
F  leaf >  l  i  y  F

As a result of this conversion into morphophonemes the following formalized rule is formed:

a)  F  pl  >  /v/  pl
b)  F  X  >  /f/  X  (where X ≠ pl)

(all models adapted from ibid.)

The rule says that the letter F changes its phonemic representation to /v/ only, when a plural ending follows, but this does not apply to nouns like “fife” (Plural: “fifes”) because it keeps the phonemic representation /f/ (c.f. ibid.).

This example of Generative Grammar in language analysis used an example from morphology, but Generative Grammar is not restricted to this linguistic level and provides other grammar models for syntax. In syntax, sentences often differ in their phrase strings while carrying the same meaning. Therefore Chomsky conceived of levels of syntactic representation ('deep' and 'surface' structure) as parts of his theory of syntax. To give an example, Chomsky applied the same 'deep structure' to the sentences Pat loves Chris and Chris is loved by Pat as to him, they essentially mean the same (i.e. they have a common abstract form). What separates them, according to Chomsky, is the surface structure, the structural representation of the meaning through a sequence of words.
Generative-Transformational Grammar

Human creativity in language production lies between these two surface levels in that deep structures are turned into surface structures via 'transformations'. These transformations change 'surface structures' of sentences (by deleting, moving or inserting linguistic elements) and are sometimes difficult to explain through traditional phrase structure analysis as they are grammatical in various positions of the sentence. This complicates rule formulation. Transformational Grammar, or Generative-Transformational Grammar, is Chomsky's alternative. It enables linguists to formalize a rule for sentences without leaving out the difficult aspect of transformations out. This will be illustrated with an example of the simplest form of transformation: particles\(^8\) in English sentences (c.f. Delahunty & Garvey, 1994). The difference between the sentences

a) Bill looked up the number
b) Bill looked the number up

lies in the surface structure, particularly in the position of the particle up. In a) it is in the middle of the Verb Phrase (VP) looked up the number and in b) it is placed at the end of the VP looked the number up. For a rule on the formation of VPs the possible positions of the particle (Prt) need to be considered:

\[
\text{VP} \rightarrow \text{V (Prt) NP (Prt)}
\]

The rule says that a VP consists of a verb (V) and a noun phrase (NP) with the Prt placed between the V and the NP or after the NP sentence final position. According to this rule model a learner might produce the ungrammatical (*) sentence: *Bill looked up the number up. The rule model does not include information on particle placement in case the sentence already holds a particle already. To solve this, one needs to return to the original sentences. Sentence a) has the same 'deep structure' as 'surface structure', whereas sentence b) differs slightly in its surface structure through the modified position of the particle up (structurally and meaningfully part of VP looked up) at the end position. This is called Particle Movement

\[^8\] Particles combine with verbs to form units of two-words, phrasa verbs, (e.g., run up, go out, break in). Their position within grammatically correct verb phrases is often not fixed.
The new position of *up* in the sentence transformed the 'surface structure', because *up* is not placed close to its semantically related partner *look*. These semantic relations apply in the 'deep structure' (DS) as much as in the 'surface structure' (SS) via phrase structure rules (PSR).

![Figure 4: Model of deep and surface structure (adapted from Delahunty & Garvey, 1994, p. 386)](image)

The simplified, general model of transformational grammar (see Figure 4) shows, how phrase structure rules are an integral part of grammars since they inform the 'deep structure' of a sentence alongside 'semantic role assignment' and 'lexical (word) insertion. Transformations, like particles, that change the 'surface structure' of a sentence from its 'deep structure' are also the reason for various possible 'surface structures' related to one 'deep structure' (see also Delahunty & Garvey, 1994, p. 387).

Alongside Generative-Transformational Grammar the generative movement produced other approaches to syntax analysis (Topicalization, Wh-Movement, Government-Binding Theory etc. [for an overview see Chomsky, 1993]).

All generative approaches to grammar are characterised by a high level of abstraction and formalization of linguistic structures with a very wide range of analysis that involves speaker's language knowledge and performance (competence/performance), the human ability to creatively apply a limited set of linguistic structures in language production (LAD), the interacting levels of language information ('deep' and 'surface' structure), the structure of language as advocated by phrase structure grammars (syntactic rules) and the structural universals languages have (linguistic universals) to be able to illustrate grammar independent of a language. This complex and very scientific approach to language makes Chomsky's
theory of grammar appear philosophical and universal, although the applicability of findings and processes in language teaching is considered restricted by many (see Arndt, 1969).

**Cognitive linguistics and grammar**

Numerous other linguistic theories followed that of Chomsky. Of these I selected the cognitive approach as final linguistic theory for discussion. The reason for this choice is that the cognitive approach concerns itself with an area that functional and generative approaches do not discuss: human cognition in relation to grammar.

Cognitive linguists view language structures and meaning with regards to their relation to human mental concepts as language is an “integral part of cognition as a whole” (Boers & Lindstromberg, 2006, p. 306). The approach “is fully committed to the analysis of meaning in all its various facets” (Kristiansen et al., 2006, p. 2). As it is less focused on a usage-based description of language, it claims that the various uses of an expression cannot be directly related to the analyzable compositionality (the alignment of the structural parts) of it (see Taylor, 2006, p. 61).

In opposition to Chomsky's concept of a human LAD, cognitivists believe that speakers have somehow learnt the language they produce and understand and can still creatively extend that language, even if it is idiomatic (Taylor, 2006, p. 76). Furthermore they understand grammar to have two different meanings. In Cognitive Grammar there is first, the “grammar as syntax plus morphology” with a narrow/traditional/descriptive meaning and second, there is “grammar as a theory of language” with a broad/generative/cognitive meaning (see Broccias, 2006, p. 81). The core concepts of cognitive theory to explain linguistic aspects or language are 'polysemy' (e.g., meaning-meaning connections between words or sentences), 'iconicity' (e.g., meaning-form connections) and 'alliteration' (e.g., form-form connections) (see Boers & Lindstromberg, 2006).

The main theories are called the Cognitive Grammar by Langacker (1987, 1991), the Construction Grammar by Goldberg (1995) and the Blending Theory by Fauconnier and Turner (1996). Each define aspects of the linguistic levels of syntax and word-formation differently, while following the common understanding of grammar as “a structured inventory of conventional linguistic units” (Langacker, 1987, p. 37). The underlying assumption is that “any linguistic expression is an association between a semantic and phonological structure, i.e. any linguistic expression is a symbol” and that grammar “is not a generative algorithm but rather, a collection of conventional symbolic units” (Broccias, 2006, p. 83). Linguistic units,
in Cognitive Grammar, are for example the verb+*-schema and the noun+-s schema. Representatives of these schemas are, for example, the words computer and cats (c.f. ibid.).

Language, in the cognitive view, is not a set of structures separated from human cognition, but it is an integral part. This has considerable influence the way Cognitive Grammar understands word classes and grammatical functions. The word-class of nouns, for example, is defined with the semantic pole (a term that is semantically related to the word-class) “thing”, because the potential “usage-event” that surrounds the schema and which often assigns nouns to things, is taken into consideration. This is also applied in the analysis of syntactic structures where verbs are viewed as prototypes of action, which are then allocated to 'Integrated Events' or 'Event Sequences' (Blending Theory, Fauconnier & Turner, 2002). Regarding the comprehensibility of existing analysis principles cognitivists themselves see the need for further discussion of the unsatisfactorily developed concepts of word-classes and grammatical relations in Cognitive Grammar (Broccias, 2006, p. 109).

This chapter has discussed the linguistic theories of functional, generative and cognitive linguistics and presented their concepts of grammar. To advance from this theoretical view of grammar to a more applied I will now discuss the role grammar plays in modern applied linguistic approaches.

2.2. Applied linguistics and grammar: an overview

Linguistics is the scientific study of language and “it is evident that linguistics is often relevant to education [but] the relation is seldom direct” (Spolsky, 1978, p. 1). This relation is established through applied linguistics.

When working with the theories of a research field as interdisciplinary and complex as applied linguistics, it is important to clearly establish the area of work and focus. Halliday et al. (1964, p. 66) explain:

A language teacher is teaching something which is the object of study of linguistics and is described by linguistic methods. It is obviously desirable that the underlying description should be as good as possible, and this means that it should be based on sound linguistic principles.
According to this argument, the theories of linguistics on grammar need to be included in the discussion that is also informed by one of the core goals of applied linguistics: usability of findings of scientific study of theoretical linguistics into practice (Back, 1970).

This study is concerned with the description and evaluation of a grammar that was designed to be applied, regardless if in research or language learning contexts. I therefore aim to base this description on a theoretically informed concept of grammar that applies to the unique context of the object of this study. The theoretical linguistic basis will be drawn from the former discussion of theories of grammar and integrated into adequate applied linguistic approaches to come to an applicable concept of grammar informed by linguistic theory.

2.2.1 Applied functional theory of grammar

The functional theory of grammar puts a strong focus on the meaning of language as well as its structure. Human beings construct meaning in language production, they give the language a function, and construct meaning from language input they received. This also means that linguistic structures are always associated with the meaning or function they were constructed for in a communicative situation. To construct function the linguistic resources humans have available they have to be directly matched to the aspects of context like world views, cultural knowledge and beliefs that build functionality and help to decipher meaning. In a language community these aspects of context are common to all members.

How can this approach be applied to a language learning context or integrated into an illustration of how language works? Language rules explain to us how language works and in the functional approach the socio-semiotic aspects of language, which have words carry social values of communication, have to be analyzed, in order to arrive at rules appropriate to the functional approach and applicable to language learning (see Halliday & Hassan, 1989, p. 4). Therefore, the learning of grammar via a functional approach will demand from learners to learn structures in the context of their function, rather than their structural value in the language system. As a result of this, functional rules of grammar will need to include structural and functional information and learners will benefit from grammar exercises that have a structural and a functional part. Exercising the learners' intuition of correct associating correctly structure and function will need to involve authentic social contexts where particular language functions are required for successful communication. Thus, every student of linguistics or a language with a functional grammar will be able to notice and understand the
context of situation, culture and the semantic, lexico-grammatic and phonetic fields. Another step would involve actively practising communicatively within particular context by using language in different functions.

For teaching the linguistic structures this also means, that structures and meaning relations that are irrelevant to a particular context are not included in the teaching syllabus (Spolsky & Hult, 2010, p. 321). This thought has influenced many school syllabuses for the teaching of foreign language.

### 2.2.2 Applied generative theory of grammar

Many transformational linguists have refused, in the past, to accept responsibility for practical issues (Spolsky, 2010, p. 1) and the generative approach to linguistics has often been considered unsuitable for language teaching (Arndt, 1969). This can be the reason for very few generative models of grammar teaching or grammar exercises. To the author's knowledge, no English language teaching book or teaching grammar has so far been built on generative theories of language and grammar.

As earlier mentioned, the generative theory of grammar functions based on the assumption that there is the internalised language (I-language) and the external language (E-language). An applied generative approach will only deal with the external language that representative of what all native speakers use as language.

One suggestion on how to apply the generative approach to grammar in language learning was presented in the 90's by Delahunty and Graves who suggest an application of generative grammar in the sentence structure rules of phrasal verbs.

The lack of knowledge of language individual information, for example of the rules of particle movement (PM) in an English sentence, can lead to errors in learners' construction of sentences. Delahunty & Garvey (1994) suggest the provision of the very important idiomatic information on the placement of phrasal verbs in sentences, as in the following excerpt of their classification of phrasal verbs:

1. Intransitive Phrasal Verbs: *give in, move on* (Because these have no direct object, PM is possible)
2. Transitive with optional PM: *bring back, look up, cut out*
3. Transitive with obligatory PM: *shut someone up, *shut up someone*

This classification of phrasal verbs illustrates to the learner when particle movement...
away from the verb without changing the meaning or grammatical correctness of the sentence. A more extensive list of phrasal verbs combined with a production exercise that illustrates meaning change in the 'deep structure' of a sentence will teach the general rules of phrasal verb placement, the exceptions and the impact incorrect particle placement in the sentence. Through acquired knowledge on the impact of grammar on deep structure a learner could potentially attain a natural intuition of, in this case, particle placement. Furthermore, he could generalise his knowledge of phrasal verb usage in sentences with the help of the classifications.

It has to be noted that a successful application of the above suggestion will likely involve less formalized rules and generalisations and more language specific information than the generative theory of grammar advocates (this issue will be discussed further in 2.2.2).

As was argued at the beginning of this discussion, applied linguistics is concerned with the application of the findings of theoretical research on language to language teaching and other language related practical contexts. For Generative Grammar, Chomsky himself introduced suggestions on how to ensure the success of a grammar which apply to every grammar with the aim to teach grammar successfully. These suggestions are also called the 'three levels of success'. The lowest level of success is that of presentation (“if the grammar presents the observed primary data correctly” [Chomsky, 1964, p. 28]), followed by a second level of description (“gives a correct account of the linguistic intuition of the native speaker and specifies the observed data […] in terms of significant generalizations that express underlying regularities in the language” [ibid.]) The third and highest level of success is that of explanation. It means “the structures that it [the grammar] assigns to sentences, are consistent with a set of universal properties of language” (Delahunty & Garvey, 1994, p. 281).

2.2.3 Applied cognitive theory of grammar

In my discussion of the cognitive theory of grammar it became clear that, despite extensive work in grammatical classes by Langacker (2008), some grammatical concepts (e.g., word-classes) require further discussion by cognitivists (Broccias, 2006, p. 109). So far, research in Cognitive Linguistics has been only small scale and restricted to the pedagogical exploitation of figurative thought (c.f. Boers & Lindstromberg, 2006). Before I present selected proposals that cognitive linguists have produced, I will look at cognitivists’ claims on grammar and the
speaker to receive some insight into the overall potential of an applied cognitive theory of grammar.

In cognitive theory the learning of languages takes place via experience. Speakers are understood to have experienced all the language structures they use before, including idiomatic language use. They can then retrieve from this experience the necessary knowledge to produce comprehensible language in communication. The comprehensibility of a language is for cognitivists closely related to the human mind that receives the linguistic symbols created by a communication partner and translates them according to a set of already experienced symbols or meanings of language. Thus cognition is the production plant and processing center for communication.

Cognitive theory understands grammar to have two meanings. Structural grammar “syntax plus morphology” that is more descriptive and cognitive grammar “a theory of language” with a cognitive meaning (adapted from Broccias, 2006, p. 81).

Despite this combination of a structural and a cognitive grammar, Langacker, the creator of Cognitive Grammar (Langacker, 2008), calls for a strictly meaningful approach to grammar. In his opinion “lexicon and grammar form a gradation consisting solely in assemblies of symbolic structures” which implies that all constructs that have a grammatical description (e.g., nouns, subject, past participle) “must in some way be meaningful” (ibid., p. 5). What does this mean for learning grammar via a cognitive approach?

The proposal for cognitive approaches in second or foreign language instruction by Boers and Lindstromberg (2006) present a list of cognitivists’ beliefs as “meeting points” for applied linguists (ibid., p. 306–307) and presents in detail the application of the cognitive concept of ‘motivation’ for language instruction. In the following two CING relevant meeting points of the proposal will be presented. All meeting points relate to different cognitivist beliefs of language and grammar learning, that are not necessarily unique to Cognitive Linguistics.

The first relates to the belief that the memory of a structure is supported if learning takes place when learners associate verbal information by engaging in figurative thought with a mental image. This theory, also called 'dual coding theory' (see Clark & Paivio, 1991) means the verbal image receives a mental image as counterpart in the learners' brain that aids in memorizing the information. Additionally, the repetition of instances with particular linguistic information helps to integrate these instances (including the linguistic information) in a learner's memory. This repetition is also part of the second meeting point that proposes
the usage-based model of language (see Langacker 1988). This model is based on the assumption that a learner has to encounter linguistic unit often enough to make it part of his linguistic inventory. According to the authors of the proposal, the usage-based model and the frequency theory have been adopted already by other applied linguists who are representatives of other approaches than Cognitive Linguistics (e.g., Ellis, 2005; Skehan, 1998) (c.f. Boers & Lindstromberg, 2006, p. 306).  

The discussion of the different linguistic theories has resulted in different concepts of grammar in language and language learning contexts. Their relevance and role in the applied linguistics of language teaching will be presented in the next part.

### 2.2.4 Grammar in the applied linguistics of language teaching

Language teaching is an integral part of the field of applied linguistics. Applied linguistics is expected, among other things, to ease and improve human linguistic behaviour in that it relates linguistic findings to other scientific disciplines and views the results more interdisciplinary. So far, selected linguistic theories were discussed and the findings in relation to grammar and grammar learning presented. Without the discussion of theories of grammar, the translation of findings for the grammar learning through applied linguistic methods, the underlying theory of the CING and its impact on the grammar learning context will not become clear.

For a structured application of applied linguistics (AL) we follow Corder (1977) who devised the following concept of an integrated AL in a context of (foreign) language instruction (FLI) based on existing AL approaches and activities.

According to Corder, there are typical features of AL for a context of language instruction that also separate the AL area of work clearly from that of theoretic linguistics. This ensures that the features clearly relate to AL in FLI contexts. Not all features are relevant to the context of this discussion, so I selected the following set from his framework:

- appropriate description of observed phenomena that have no adequate terminology in theoretic linguistics (and vice versa)

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9 Other concepts, like that of 'motivation', are important parts of this proposal but will not be further discussed here, as they bear little relevance to the context of the CING grammar.

10 In this part of the discussion, the term “instruction” in combination with Foreign Language is understood equivalent in meaning to the former term of “context of grammar learning”.

- 30 -
- application of theoretic language models, e.g., linguistic models integrated in learning/teaching contexts

- theoretic models of grammar (linguistic theory) and applied models of grammar (teaching) are defined clearly and the requirements (content selection, structure and user-orientation) for a learner grammar established (adapted from ibid., translated by the author)

These features apply to this discussion in the following way. Feature 2 is represented in 2.2.2 where we related and translated the concepts of the theoretic grammar models to the grammar learning context. Feature 1 will be represented in the following part, where applied linguistic concepts of grammar bring ideas to the discussion that are not part of grammar theory and describe them accordingly. I added the case where the theory contains concepts alien to the applied approach or learner as this is also an important aspect of successful applied linguistics. Feature 3 will also be presented in the following part, where the theoretical grammar models that have been translated to a learning context will be translated into applied linguistic concepts of grammar in language teaching.

All of this will also be related to the CING to illustrate which theory of grammar or interdisciplinary concept of grammar applies to its content.

2.2.5 Theories of grammar in the CING

Models of grammar theories applied in learning

Within the learning process grammars are aids to erase doubts about grammar structures or to confirm knowledge. This is done through the reading of rules and language examples as well as through the completion of exercises. Within the discussion in 2.1 it was already argued that each grammar concept differs in its grammar content and presentation.

Now is the time to look at how the grammar models differ in the applied linguistic review following Corder's features (see 2.3). How this impacts grammar content and presentation as well as the learning context will also be discussed and the findings will be related to the CING to provide a grammar evaluation of the tool informed by linguistic theory and applied linguistics.
Applied linguistic functional grammar

Feature 3 (theoretic): According to the functional theory of grammar, learners exercise their understanding of the structural and functional concepts of linguistic units (e.g., word-classes, tenses, syntactic structures etc.) through learning the lexico-grammar (system of structure – meaning relations) of language. Different contexts which require the use of language for different functions need to be experienced by the learner and any information (structural or functional) that is irrelevant to a context will not be integrated in the material related to the same.

Feature 1: If real life content, that is important to the learner, differs from the classification of content presented in the grammar, the learner might not be able to produce the correct language function. This means contexts that represent situations for particular language functions need to be prepared accordingly for the learning context in question. Language structures and functions relevant to the new context need to be added. This can be done by the teacher who adapts the learning material to the learning situation.

Feature 3 (applied): The learning context has to be analyzed in detail and establish learner needs, learning goal and learner knowledge of language. According to this analysis the functional material has to be adapted in level, content (topic / structure) and in structure (*Top-Down* or *Bottom-Up* approach [see 2.2.1]).

Grammar content: Functional grammar rules differ considerably from a structural approach in that all grammar and vocabulary is part of a system of structural and functional interrelations between language and the functional meaning it can convey. Therefore the rules on particular words or tenses will predominantly explain their use and functions in communication with matching sets of language examples representing the appropriate contexts in which the functions apply. The structural value of language forms and its relation to function will also be presented in functional grammar rules.

Learning context: The learner will be involved in language analysis tasks to investigate and examine different contexts and the use and function of language. Exercises will not come in form of drills, but rather contextualised role-play which requires the taught language structures and functions.
Applied linguistic generative grammar

Feature 3 (theoretic): When following a generative theory of grammar, language will be presented through formalized and general (language independent) rules of grammar and examples from which the learner can then deduce the language specific rules with the help of what is called his innate LAD. The formalized rule as well as the suggestion for a generative approach to teaching the grammar of phrasal verbs (Delahunty & Graves, 1994) we presented in 2.2.1 will be used as basis for the discussion of the applied version of this feature.

Feature 1: The metalanguage-terms 'Transitive' and 'Intransitive' have to be explained or revised depending on the level of learner knowledge of grammar. The same applies to the abbreviations and symbols in the formalized rule. This can be done in a deductive or an inductive way for the learner. Either the rule is presented in its formalized form (deductive) or in a traditional, descriptive rule translation (e.g., Phrasal verbs have the particle moved whenever...) (inductively) in combination with language examples to the learner. Subsequently, the learner can deduct the meaning of the rule by analyzing the language examples with a view to the formalized form or induct the formalized, general rule through understanding the translated rule text and investigating the language examples alongside.

Feature 3 (applied): It is unclear in what way the applied model has to include explanations of the formalized rule symbols and abbreviations, as it depends largely on the learner group and its experience with this theory of grammar. In agreement with Delahunty and Graves, we also support additional information on all parts of a grammar rule where different options of structure use or placement are involved.

Grammar content: Formalized rules with additional explanatory information on rule exceptions or options in choice of structure or form. Grammar diagrams that show the structural make-up of the rule and its linguistic units (see 2.2.1 on 'deep' and 'surface structure'). Matching authentic language examples to represent what native speakers use in real communication. Deductive and / or inductive exercises as described in Feature 1, authentic language corpus exercises that enable learners to apply and later confirm or dismiss the rule in question.

Learning context: Tasks with formalized rules are more abstract than traditional gap-fill tasks and learners might need more instructional information on how to apply generalized grammar rules in language production. This can be supported by deductive or inductive tasks (as suggested in Feature 1) that involve rules and language examples. Feedback on the results
and learners' task progress will be an important part of the tasks to ensure learning success and learner comprehension.

**Applied linguistic cognitive grammar**

Feature 3 (theoretic): The theory of cognitive learning views language as an integral part of all of human cognition. Therefore language will be presented in relation to the symbols it represents in the human mind. The grammar of a language will be presented in two ways: a descriptive structural way that describes the “syntax and morphology” and a cognitive way that relates language to its meaning (i.e. symbols, mental concepts). Despite the more descriptive, structural way, the grammar model will be dominated by the language's meaning relations because “constructs that have a grammatical description (e.g., nouns, subject, past participle) “must in some way be meaningful” (Langacker, 2008, p. 5). In his opinion this is reflected in the “lexicon and grammar” which form a gradation consisting solely in assemblies of symbolic structures” (ibid.).

Feature 1: A description of symbols and / or mental concepts has to be included in teaching to ensure comprehensibility of the language's meaning relations. While it has been established that the classification of grammatical categories has not been sufficiently concluded for a cognitive model of grammar, the categories presented in instruction need to have clear system of classification.

Feature 3 (applied): Similar to the functional approach, cognitivists believe that the experience of language is crucial in order to learn it. In the sequence of learning tasks, this experience can be triggered through role play, analysis of communication through texts, video or audio material or role-play. Symbols and mental concepts will be an integral part of the learning material as well as tasks that show their interrelations with language structures.

Grammar content: With the lack of cognitive models applied in teaching, this can only be a suggestion. The English tenses simple past and present perfect are often accompanied by a particular meaning context of the sentence or signal words. Translating these into symbols or mental concepts of time or time sequence means establishing the first step of the language – meaning relation that is the core of the cognitive approach. A classification of grammar structures will be required as a basis on which the relations can be presented meaningfully and in a structured way. Illustrations or explanations of the related language structures will accompany the translations.
Learning context: Learners can be actively involved in this translation process. In that way their mental concepts of the structures (tenses) can be confirmed and practiced, or if necessary, revised. Vocabulary instruction will differ from grammar instruction in that the related symbols are easier to define than grammar concepts. The learning context will require situations, in which learners can practice, discover and analyze either the use of language structures with regards to their mental concepts or how to express mental concepts through particular language use. The use of the language, as proposed in the usage-based model will be at the core of the learning context.

This review of the linguistic models of grammar applied in learning contexts has presented very general suggestions on grammar content and learning context, but also revealed how the application of the model brings necessary additions (e.g., translation of rule symbols and abbreviations) to the grammar application. How the CING compares to the discussed grammar models and applied review features will be the focus of the following CING review.

Applied grammar models: reviewing the CING

The CING is a very complex and unique grammar designed for the application in research or learning contexts. It was made for autonomous use, its content includes various types of material presentation, the way it is used (as a research or learning tool; autonomous or learner group + instructor) depends on the learning situation/the user and it has a hypertext content structure, comparable to a website with different content levels. This review will not cover this complexity, but focus on the grammar models and applied review features. A more in-depth look at the CING will be taken in 2.3. I will select individual examples from the CING content on the simple past and present perfect to illustrate relevant aspects of the tool.

The CING's material presentation always involves authentic language examples, individual sentences taken from authentic language corpora. This will make it impossible to present complex functions of language structures. Furthermore, the CING lacks presentations of situations in which learners could apply particular language structures. The same is true for role-play tasks, complex cultural situations and the rule system of lexico-grammar. To be applied in a functional model, the CING would obviously require extensive additional information.
The CING's rule material is not formalized as generative grammar rules are, but it is descriptive in nature and language dependent (i.e. English). The rules describe exceptions and generalizations of English language structure use for users to read and confirm against sets of authentic examples. Thus, the CING user cannot really experience language as the generative approach demands, but instead practice grammar with the numerous gap-fill and multiple-choice exercises on examples sentences. With its different types of rule presentation, the CING even enables learners to discover rules (via examples and questions that aid the discovery), but it does provide for formalized rule construction. For an application in a generative way, the CING provides the corpus of authentic language examples, but lacks a classification of structures or word classes (similar to Delahunty & Graves, 1994). This, tasks to experience natural language in communication the way native speakers do, and formalized rules would need to be added for it to be applied generatively. Should the CING be used as a research grammar for students of linguistics, the generative approach appears much more suitable. The CING could work as a basis for a generative grammar construction. In this case, additional material on the formalization of rules (e.g., as task) or on specification of authentic language material for generalizations would need to be added.

Nevertheless, as a grammar the CING can still be compared against Chomsky's 'three levels of success' (Chomsky, 1964). The CING was equipped with language corpora that contain mainly language examples from the British National Corpus (BNC) and excerpts of publications on history and law by the European Union. This language material has mainly been produced by native speakers and we thus consider level one achieved. The material does, however, present language from various topic contexts. To achieve level two the CING has to present language regularities correctly through a correct description of the “linguistic intuition of the native speaker” and a specification of the data in terms of generalizations. The CING does not make generalizations of rules and its data has not been specified. Of course, the rule material can contains regularities that relate directly to authentic language examples, and this can be interpreted as a reflection of native speaker intuition. The second level has only been achieved incompletely. In order to establish, if the CING achieves level three of success, a set of universal properties of all language structures reviewed in the CING has to be compared to the CING language examples assigned to the rule material. This has not been possible so far, which is why level three of success has not been achieved. According to these results, the CING requires considerable additions modifications of its material for a generative grammar approach.
I come to the last grammar theory, the cognitive approach to grammar. As already stated with respect in the functional discussion, the CING lacks contextual information on the language example, symbols and mental concepts of grammar structures as well as opportunity for real experience of language meaning in communication. However, some rules are supported by graphs that visualize the grammar structure and its meaning. These graphs are less rule focused, but more concept of a rule focused and should support users in understanding complex relations between structures (e.g., tenses and time periods) and concepts (e.g. time now = 'speech time'). While the CING lacks the opportunity for real experience and information on language – symbol / mental concept relation, the graphs and the meaning focused approach to rules touch the mental concept approach to grammar learning.

2.3 Grammar description in view of grammar application

In this part, the discussion of grammars and grammar learning will be continued. It began with a focus on grammar concepts in theory and content and now leads over to the discussion of different presentations of grammar, their potential impact on use and their relation to the CING.

“Grammar is the most unique aspect of language” […] and it is “learned in different ways from anything else that people learn” (Cook, 2008, p. 18). This makes it a subject of study to many people, within linguistics and SLA as well as other study subjects, and a myriad of grammar books has been published in the history of linguistics, even if counting only English grammars.

In this study, we are dealing with a grammar that has a unique structure, different types of grammar rules presentation and grammar exercises with feedback for users. Despite this wide range of options, the CING requires a set of criteria that help to evaluate its benefit for all potential users.

A list of possible goals, target learners, content, form of presentation and exercises will guide the review of the CING to gain insight into the relations between style of presentation, content and use in learning. What role these relations play in the application of the CING is an important part of understanding the potential of the grammar. The goal of this part of the chapter is to answer this and other significant questions with regards to the parameters derived from the applied list of criteria.
2.3.1 Introducing the CING

The CING presents the “description of the underlying rule system of a language by the linguist” (Helbig, 1993) as its grammar content and it is a web-based grammar freely available to anyone with access to the internet. A login can be requested on its website free of charge.

Its content contains a selection of grammar topics which are “exemplary grammar areas that make English special in many ways” (Schmied, 2001) and they are presented in two different ways, also called the Dual Approach (Schmied, 1999a). This unique approach sides with an authentic English language corpus of approximately 3 million words (Schmied & Haase, 2003) and permits different types of grammar learning like process or product grammar learning (ibid.). One reason for this combination of grammar rules and an authentic language corpus was to allow the user to recognize that rules are not absolute, but that there is “prototypical” and “creative construction” involved (c.f. Schmied, 2001).

The application of the CING in use was initially intended to range from a reference to a learner-centered pedagogical grammar (see Schmied, 2001). A possible application as user or as research grammar also relates to this range of application. To understand better where the CING stands in the area of grammar research and learning, a list of relevant criteria is required for an informed investigation.

The following discussion of the criteria (adapted from Thurmair, 2010 and Zimmermann, 2003) will be a view to grammars in general, to the CING and the grammar learning context. The review will follow the list of criteria and the CING will be related in discussion to each criterion, while being described in detail.

2.3.2 CING goals and target groups

The goal, or target area, and target learner group are central aspects of a grammar because they determine its content, content presentation and user behavior. A grammar for language learners (learner-grammar) is expected to present grammar differently than a scientific (linguistic) grammar, because the needs of each target group are different. Grammar use for scientific purposes would require an offer of language examples and rule description that matches the scientific task of the user, on which we will focus here due to its relevance in this study. Someone with the goal to improve grammar competence would require
comprehensible and realistic language material as well as descriptive rules to aid his learning. Additionally, exercises to practice the revised content can help to meet the learner needs.

The necessary support measures (e.g., introduction, meta-language glossary/translation and corpora search engine) for using or understanding the grammar also differ for both. The selection of the grammar material, its language level, and presentation are also adapted to learner groups to ensure the grammar's applicability with the target group.

While forms of use of a grammar (e.g., scientific investigation or research, confirmation or revision of grammar knowledge for learning) also vary between target groups, grammars do not necessarily provide adapted tasks. Some might offer exercises and questions to reflect on grammar rules. This is not common rule with grammar books, though.

The goals grammars have are generally closely related to the target user group. A grammar with a corpus tool for language authentic examples and presentation (and formulation) of grammar rules according to linguistic theories (e.g., functional, generative, cognitive) focuses more on linguists or teachers as target group. Grammars with an aim to explain or instruct grammar and offer help in understanding and learning it (as a second or foreign language grammar) are designed with learners in mind.

The CING was designed to cater for learning and research as well as offer grammar as reference and as pedagogical concept of grammar learning. The learner target group consists of native speakers of German who have intermediate or advanced English level (see Figure 5).
For linguists (researchers or students) the tool provides the corpus material and search engine and the different grammar rule presentations (inductive, deductive and exercises). Used in combination these CING materials render possible research on grammar use in authentic language, its variations in application and meaning or statistical investigations into the usage numbers of particular grammar structures in selected authentic texts.

The CING's different approaches to the presentation of learning material and a corpus search engine are also oriented towards the language learner but with a different sense of application. The correct and creative use of grammar in language production is always a challenge for learners. Many researchers believe that grammar learning through a variety of rules alongside the analysis of language examples leads to better competence in language production. When learning with the CING, the different grammar presentations can aid in the learners' discovery of rules (inductive material pages), practice and revision of rule knowledge (deductive material pages, exercises) or the uncovering of new areas of grammar rule application in authentic language examples with the help of a corpus search of a particular grammar structure. Another option for a learner is to learn grammar through a process of just rethinking grammar with the help of the CING rules, examples or exercises (process learning) or to learn it through practicing with the exercises and feedback (product learning).
Despite the fact that these actions are all learner related, anyone with access to the CING can use it accordingly, without being a learner or linguist. This brings us to the question: Does the CING provide support for those who are not experts of English grammar? The answer to this question involves aspects of the CING (e.g., content structure, page design, and rule presentation) that will be discussed in detail below.

2.3.3 CING Grammar content and presentation

Content scope, content structure, type of content presentation, and content use are all relevant aspects of a grammar type and will be discussed in the same order. Grammars often differ in their content and in the way they conceptualize and present it. This makes for countless types of grammars and grammar books in the field of grammar writing. Those relevant to the CING will be included in this discussion.

Content and content structure

The CING content is built on grammar topics that make “English special in many ways” (Schmied, 2001). According to the CING’s content index page (see Figure 5, Sitemap) these topics represent aspects of morphology (Tense / Aspect, Conditional Structures), syntax (Relative Clauses, Prepositions, Nouns). Semantics and Phonology are not represented.

In the CING hypertext content structure (see Figure 5) Tense / Aspect is at the top of the list followed by Relative Clauses, Conditional Structures, Prepositions and Nouns. This list represents the first level of the hypertext structure. The second level shows a further division of Tense / Aspect into Continuous Forms, Perfect Forms, Perfect Continuous and Taking about the Future. The hypertext structure goes as deep as the fourth level which contains all the content pages (e.g., Use of Perfect). Previous levels only contain navigational links of a topic that lead learners to the respective content pages. The Sitemap (Figure 5) is not the only way to enter the content structure and reach pages. The Content Menu (Figure 5, on the left) includes the same links as the Sitemap, but it does not give an overview of the structure. Instead, the Content Menu give the user access to all existing hypertext levels through which all users proceed to reach content pages. One level above the content pages, one of the core characteristic of the CING, the Dual Approach is already represented in form of the Select Button (see Figure 6).
With the help of this button users can choose the type of material presentation of their selected content page. When we think about the content structure some of the best known grammars of English to the present (Quirk et al., 1985; Biber et al., 2002), the following becomes obvious. Not all titles in the CING content structure and navigation system contain metalanguage in form of scientific terms of grammar structures. In Figure 6 the user is required to understand what the first two titles in the list mean (Simple vs Continuous, Reference Time) in the context of the grammar area of tense and the continuous in order to make a decided next step in page selection. Is this knowledge missing, the next step is likely to be just a guess or a trial of pages.

In the following discussion we will focus on CING examples in the grammar area of tenses, in particular simple past and present perfect because the research of this study was conducted on these grammar topics.
Inductive and deductive material presentation

Returning to the *Select Button* on the navigation pages, it presents all available types of content presentation (*Discovery, Explanation, Exercises*), called 'approaches' in the CING. The user can click the presentation type of his choice on the button and proceed to the respective content page. So what do these types of content presentation mean? The introduction page (see Figure 5), gives each user a short explanation of only two of the terms. *Exercises* is unambiguous enough and does not need explanation, *Discovery* means users can “discover” the rules on their own via examples and hints, *Explanation* means rules and matching examples are presented in detail. As these pages present two types of material presentation, this is also called the *Dual Approach*.

Discovering a grammar rule with the help of a set of language examples means, deducing the rule from language itself. I will call it 'discovery learning' and an inductive approach to material presentation. For a learner who already has some knowledge about the grammar topic the inductive approach provides crucial data (language examples) for the testing of existing rule hypotheses with the help of hints (see Figure 7), for the “forming [of] generalizations” (Rutherford, 1987) of the grammar rule in question. In discovery learning “the use of authentic material is the decisive methodological instrument” (McEnery & Wilson, 1997, p. 6) to help learners to deduce general grammatical rules from authentic language data – and this simultaneously represents the process that defines inductive learning (see Schmied, 1999b; Johns, 1993). Inductive more than this as the following discussion of a CING *Discovery* page will show. The screenshot (Figure 7) is of an inductive material presentation on the present perfect. At the top a brief introduction sentence (or hint) instructs the user what to look for (area of use) in the following set of seven authentic language examples. Then the page offers an exercise to confirm the hypothesis made of basis of reading the language examples according to the instruction. This combination of language examples, instruction and confirmation exercise can help learners to discover the areas of use for the present perfect, how the present perfect is used by native speakers and give an update of the learner knowledge of the present perfect, if the exercise was completed but revealed a gap between the learners' knowledge and the actual rule (e.g., that there are more areas of use for the present perfect than he previously knew). More authentic language examples follow, accompanied by hints, on the bottom of this page and provide even more material for discovery learning. Discovery learning is a process that takes place via deduction of grammar...
rules based on other information than rules and is also called *process grammar learning* (Schmied, 1999a, p. 223).

Figure 7: CING Discovery page (Present Perfect I)

Alternatively, the user can opt for the *Explanation* page where descriptions of rules and matching example sets are given. This type of presentation I will call 'explicit learning' and a deductive approach to material presentation. With this type of grammar material the learner can read the rule description and then relate the rule to the provided examples sentences. The user can even opt for an exercise on the *Explanation* page following his work with rules and examples. In a traditional classroom a similar process takes place, where “the instructor explains a grammatical rule first and then directs the class in contextualized exercises which practice the application of the rule” (Schmied, 1999b). In this way, learners progress in their knowledge from the general (rule) to the particular (examples) (c.f., ibid.) which is also called 'product grammar learning' as the rule is presented to them as a product of knowledge they assimilate. Based on this product of knowledge, the later learning or language production takes place. A less product and more process learning takes place in the inductive approach. There the progression takes place from the specific (language examples) to the
general (the learner's rule generalizations) and is also called 'process grammar learning' (Schmied, 1999, p. 213).

When we take research on both approaches into account, we find that there can be issues with either one. Deductive presentations of grammar are by some considered to be the least successful (see Heron & Tomasello, 1992; Shaffer, 1989) and the inductive approach may leave adult learners unsatisfied due to the lack of explanations of grammar rules (Ellis, 1994). A combination of an inductive approach which is turned explicit might help to overcome this dissatisfaction. In an explicit inductive approach learners first engage in 'discovery learning' and form rule generalizations from the authentic language material. Then they are given the opportunity to verbalize and discuss their own grammar explanation. Feedback from an instructor on the grammar explanation and its discussion make the rule more explicit to learners and provide the needed explanation.

The third type of material the CING offers are Exercise pages. They contain numerous gap-fill and multiple-choice exercises with authentic language examples supported by a feedback function. This feedback function also exists for all exercises on the Explanation and Discovery pages (see Figure 7) in form of a Check-button. The types of exercises on the
Explanation and Exercise pages are of the same type, gap-fill or multiple-choice with authentic language examples, a Check-button and a display feedback results in the right frame of the screen (see Figure 9).

**Figure 9: CING Exercise page with Check-button and feedback result**

**CING as reference or pedagogical grammar**

The freedom that the CING offers each user in his choice of topic and material presentation shows that it has the potential to be applied as a grammar in different ways, as a reference or learner-centered pedagogical grammar (Schmied, 2001) as initially intended by CING developers.

“Reference Grammars [RG] attempt to give comprehensive and systematic descriptions of the various areas of grammar (Mackiewiz & Preuss, 1986, p. 217). A statement that cannot be dismissed for the grammar areas the CING includes, but this group of areas is not as extensive as linguists often expect it of reference grammars (Chalker & Weiner, 1994). Therefore, the overall comprehensiveness of the CING content is clearly lower than that of other RGs. However, on the grammar areas the CING holds (e.g., present perfect) it proves to be fairly extensive in content pages (see Figure 5, Perfect Forms) which makes its application as a reference grammar for this individual topic possible. Support to this
conclusion is given by Schmied, who states, that the CING offers a “reference grammar component with rules and explanations”, in addition to a component that enables users to deduce a general rule from a set of examples (Schmied, 1999b, p. 25).

Another common assumption about reference grammars is that of an extensive use of grammatical metalanguage (Rutherford & Sharwood-Smith, 1988; Ellis, 1990). The CING titles in the navigation structure contain some metalanguage, but a look at the CING’s Sitemap (Figure 5) shows that for the grammar area on tenses and aspect most titles are free of metalanguage (e.g., Use of Perfect, Perfect in Context, Do NOT use Perfect). The inductive approach to material presentation on the Present Perfect (Figure 7) and corresponding deductive approach (Figure 8) also show little metalanguage in the material (except for adverbials and present perfect). For a better overview, a deductive page with a different material design will be looked at. The first page Use of Perfect (Figure 10) in the content of the area Perfect Forms/Present (see Figure 5) contains a graph on the time-relation of past and present perfect structures.

![Figure 10: CING Explanation page (Use of Perfect)](image)

Within the graph and the text it also contains grammatical metalanguage (e.g., Reference Time [RT], Speech Time [ST]) that has not received introduction or explanation. This is likely to lead to comprehension problems or confusion with users. Despite this lack of
metalanguage explanation, the CING grammar material appears to be generally light on metalanguage.

To discuss further the meaning of reference grammar we return to other claims made about it in the past. Regarding the pedagogy of RG content, there are “grammars and dictionaries with grammatical information tailored for the needs of second language students” (e.g. Hornby, 1974; Collins Cobuilt Advanced Dictionary of English, 1987) but generally RGs lack pedagogic support in their information presentation. Since RGs are intended to be references on grammar, they require the same as other reference works (e.g., Dictionaries), autonomous behavior of use. This does not mean that RGs can only be used autonomously, but, according to Greenbaum, they can be integrated into learning contexts as textbooks. He defines RG in relation to his own grammar which is intended for individual consultation and is “not expected to be read [...] from beginning to end”, but it can be used as textbook in language teaching (see Greenbaum, 1996, p. 26). The CING caters for this individual consultation in that the hypertext structure and page design make it easy for users to skip pages irrelevant to their learning goal. It also requires users to move autonomously within its structure and lacks in pedagogic support measures (see Figure 5, 6, 7, 8, 9) that support the grammar material (e.g., explanation of exceptions), language examples (e.g., translation) and feedback results to exercises (e.g., reason for the error). One support measure the CING has on the introduction page is the link How to use the Chemnitz InternetGrammar (see Figure 5, bottom), but it only provides information on use and not material. Were the CING implemented into a learning context these suggested measures could easily be integrated (e.g., reflection periods after autonomous work) or provided as support by the instructor.

As the name suggests, this type of grammar receives its definition based on its pedagogical character. Compared to RGs pedagogical grammars (PG) are not as comprehensive in their grammar content, but instead provide considerable support to the learning process with the help of pedagogical descriptions (see Corder, 1973). The PG grammar material stresses “regularities rather than exceptions” and uses authentic language, instead of an “idealized and decontextualized form of language” for language examples (Sanctobin as cited in Engel & Myles, 1996, p. 13). This content works in combination with the pedagogic aspects of a grammar. DeKnop and DeRyder call this combination “two interwoven layers”. The first layer is an “inventory of all the form-meaning units of the target language” which can be

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11 Pages can be read just by themselves, without the need to consult other, related pages.
lexical, grammatical or constructional in nature. The second layer is “an optimal teaching and learning infrastructure” to facilitate acquisition of the form-meaning units (c.f., DeKnop & DeRyder, 2008, p. 1) which then should lead to the promotion and guidance of learning processes in the acquisition of language (Dirven, 1990, p. 1).

It is important to understand what 'optimal infrastructure' means or what promotion and guidance involve. In language acquisition, learners can be supported by drawing their attention to the linguistic patterns and underlying rules and principles (see Ellis, 1990; Gass, 1991) to aid their individual discovery of rules from provided language and grammar material (c.f., Mohammed, 1993). Furthermore, grammar material can be ‘pedagogised’ for the teaching context and learner knowledge (Besse & Porquier, 1984). This involves the selection and grading of learning material with regards to learner knowledge and the learning goals (see ibid.), the guidance of (learner) attention to rules and the provision of examples of practical application (authentic communication context).

This manipulation of content for the sake of the facilitation of its acquisition can lead to a prescriptive description of the grammar material that aims to tell learners “what to say or write” (Quirk et al., 1985). Against the background of increased emphasis on authentic language in language teaching a form of prescriptive PG cannot be considered up-to-date anymore (see also Greenbaum, 1986; Dirven, 1990; Chalker & Weiner, 1994; Swan, 1994). A more appropriate alternative would be PGs that are balanced mixes of descriptive and prescriptive grammar description (Greenbaum, 1986) with simple content arrangement\(^\text{12}\) and little terminology\(^\text{13}\), (metalanguage) to serve the preference of teachers and learners while providing grammatical explanations that are sufficient in their variety to reflect language reality (Chalker, 1994). Mohammed (1993) also calls for little metalanguage and “plain and understandable” material (p. 60) in a PG as metalanguage is neither a necessary requirement for the acquisition of explicit foreign language knowledge (Rutherford & Sharwood Smith, 1988; Ellis, 1990,) nor for the successful processing of language in general (Garrett, 1986). Instead of extensive metalanguage, pedagogical grammars “should take the needs of the learners as their starting point” (Sanctobin as cited in Engel & Myles, 1996, p.13). By means

\(^{12}\) Grammarians and researchers in the past have commented on the lack of consistence in topic arrangement within grammars (Chalker, 1994, p.39; Leech & Svartvik, 1975), which results in problems to find the grammar information for learners and teachers alike.

\(^{13}\) Here, Chalker (1994, p.36) refers to Leitner (1990), who found learners to be accessing dictionaries first, when confronted with a language problem and not grammar books. Relevant information in a dictionary can be easily accessed via vocabulary search. Misunderstanding of grammar terminology (e.g. Present Continuous – Present Progressive; Present Tense – Simple Present) complicates grammar learning for teachers and learners.
of their pedagogical support measures of material manipulation and task design, they should be aids to learning, rather than the object (see Corder, 1988).

These demands on content also apply to the CING if it is implemented as learner-centered pedagogical grammar to fulfill the “practical effect” (Corder, 1973, p. 331) a pedagogical grammar has. To achieve this practical effect pedagogisation of content is involved and an instance (instructor or self-learning material) that decides on how to present the “information about the structures of the language to the learner in such a way that it helps him to develop his communicative competence” (ibid.). The requirement of pedagogised content is not fulfilled by the CING content as it has not received any grading (in level of difficulty) or selection with a view to learner needs. In addition, it is missing tools to guide learners' learning process (e.g., detailed feedback information with hints at further learning steps). Nevertheless, the CING fulfills the requirement of reduced metalanguage as was established earlier and it offers more. The design of material on Explanation and Discovery pages is aimed at introducing the learner to a structure, making him aware of characteristics the structure has (meaning or structure) and letting him reflect on the introduced information and his understanding of it with the help of authentic examples (see Figure 10). The Explanation pages follow this reflection with rules whereas the Discovery pages present more authentic examples and an exercise for the learner to test his comprehension. Regardless of the material design, the learner is required to discover rule information by himself via reflection on authentic examples. This discovery represents an important aspect of modern language teaching, as it directly involves the learner and his existing knowledge and helps him to become familiar with authentic language use. This is the first step to the development of an intuition ('Sprachgefühl') for the appropriate usage of grammar patterns in real communication (Schmied, 2004, p. 102).

To implement the CING successfully as a learner-centered grammar, the basic requirements are already in place. What the CING still needs is a pedagogisation of content combined with the provision of “data, examples, explanation and verification of learners’ hypotheses in form of correction” (Corder, 1973, p. 336) through an instructor or clearly explained self-instruction material that accompanies the learner's work with the CING. To give some insight into how the CING could be integrated into a pedagogical grammar context with an instructor, the model by Corder (1973) will be used (Figure 11).

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14 The selection of material to present interesting aspects of English grammar to learners is not learner-centered to a particular learner group. Therefore this is not considered a measure of 'pedagogising' grammar.
In his model learners proceed through four large areas of content (inductive exercises, data and examples, explanations and descriptions, testing exercises). The CING's inductive material can provide for inductive exercises, the deductive material can be used for explanations and descriptions, data and examples are included in all inductive, deductive and exercise materials and testing exercises are available from the exercise pages or the inductive pages, where the hints in instructions and confirmation exercises can work as part of the tests. Corder's suggested course of procedure through the model begins with “data and examples”, from where the learner proceeds to the “inductive exercises” or “explanations and descriptions” to complete both (regardless of which he started with) and finally proceeds to the “testing exercises”. In Corder's opinion, the goal of this course is to “develop hypotheses and be given the opportunity to test their correctness” in any case (Corder, 1973, p. 336). It is obvious that the CING holds all the necessary materials to apply in this model, but the way learners proceed in each step and their selection learning topics and the testing of their hypotheses for correctness will still need the help of an instructor who can ensure the success of each learning step. Otherwise a learner has to do this himself each time he proceeds to a new exercise, as in self-regulated learning, which will be discussed in details in chapter 3.

Concluding this review, it can be said that the CING holds many aspects a reference grammar has and displays the potential to be a successful RG that could, nevertheless, be
demanding for some autonomous users due to its metalanguage / content titles and lack of pedagogical support measures. As a pedagogical grammar the CING offers the freedom of material choice but a lack of learner-centeredness and pedagogical support measures. It contains all the basic materials required in an applied model of pedagogical grammar (Corder, 1973) and even includes a corpus search engine for more extensive language analysis (e.g., in an inductive exercise). An implementation of the CING into the model by Corder indicates that its flaws do not hinder its use, but that an instructor, a more detailed definition of application, material, and activities for learner, teacher and the teaching context (see Corder 1973) is needed.

2.3.4 Prescriptive or descriptive

Based on the definition of the types of grammar description 2.1 we summarize: Prescriptive grammar takes models of language and prescribes, according to the models, how language is to be used. Artificially constructed language examples are used to illustrate the prescriptive rules on the correct use of language. The aim is to make speakers use 'good' (correct) language as their artificial (often outdated) model prescribes. For example, a prescriptive grammar would consider “He said...” 'good' language, but “He goes...” would be dismissed as incorrect. Learning with a prescriptive grammar means learning an artificial variation of language that might not match up with real communication.

Descriptive grammar investigates how language is used by native speakers and forms, based on these findings, comprehensive description of what is actually said in real communication. These descriptions are descriptive models and rules on the use of grammar which will change with the change of language. A descriptive grammar's goal is to teach what occurs in native speaker language. This always requires a corpus of authentic language examples. Learning with a descriptive grammar means learning the rules and explanations for structures that are part of real-life communication.

The CING only uses authentic language examples to illustrate rules. The grammar rules contained in the CING are on topics of English that are relevant to native speakers of German. To illustrate how the CING describes English language structures, we will present an example of its deductive rules (see Figure 12).
The design of the page places an introduction to the general area of use of the two structures in question (simple present / present continuous) at the top of the page ("In many languages […] verb-form."). According to this introduction, the learner needs to focus on his or her point of view compared to the verbal process or activity. In the paragraph below the learner is instructed to compare two authentic examples of the simple present and the present continuous. The page begins with an instruction to analyze in relation to the speaker context (point of view) and the sentence meaning (activity/process) and language examples. The rule only comes after the examples: In English, using the present continuous in its most basic meaning shows that you view the verbal process as taking place, being on-going or in progress, at the moment of speaking. This is why the continuous is often called the progressive (see Figure 10). This rule does not command a particular language use, but it describes why the language structure of the continuous is used in a particular situation as reflected by the authentic language examples. Following this rule are further examples which reflect the trigger words that are common for the continuous.
This example shows clearly how the CING describes language descriptively. The grammar structure is illustrated by authentic examples while the introduction (also called 'hint') to the rule and rule present describe why and when the structure is used. The learner is instructed to analyze the authentic examples with a particular task focus (here: point of view, verbal activity/process) before the rule itself is presented. By this means the learner is motivated to think about the meaning and the structure before comparing his reflections to authentic examples. Such an activity can involve learners' hypothesis testing and their reflection on the particular use and meaning of structures that is so unique to authentic language. Through this process it is possible to develop a Sprachgefühl, a feeling for use of structures in the foreign language like native speakers (see Schmied, 2004). Learning with prescriptive grammar and artificial examples would fail to provide the necessary information.

One potential disadvantage of this approach to grammar description is that individual sentences provide only limited information on the context of a sentence. Were the CING to present whole conversations or authentic contexts where the simple or continuous is used, the learner would have the opportunity to explore the language and topic context around the grammar in more detail and learn more about real-life conversation. This will also further help the development of the learner's Sprachgefühl.

2.3.5 Grammar exercises and grammar learning

It has long been established how important grammar competence for successful language learning is. To many, grammar represents the “patterns and regularities which are used to convey meanings” (Cook, 2008, p. 18). The linguistic areas mainly associated with grammar are the syntax and morphology of sentences (see Thornbury, 2010). Each learner has his own knowledge of grammar that interconnects all other linguistic areas of study (phonology, semantics, etc.) and is considered to be highly systematic. A learner who fails to produce syntactic or morphological structures the way native speakers do is very likely to fail in communication.

For a long time in language teaching teachers, learners and even researchers believed, that grammar knowledge that has been learned can be easily transferred into productive competence (Fandrych, 2010). If that was true, the knowledge of language structures (explicit knowledge) would somehow simply be integrated into the learners' productive language competence (implicit knowledge). Countless cases of learners who left the language
classroom without being able to communicate are evidence to the contrary. Fact is that human beings have to practice language in order to speak it. This practice needs examples and communication contexts, because we do not learn a language simply by memorizing an abstract rule (Multhaup, 2002, p. 92, translated by the author). This practice also needs exercises and tasks, which are often considered two different things.

What does this mean for grammar exercises? How do we know what exercises practice and how can be apply exercises reasonably in the process of learning? To answer these questions we will define task and establish a set of principles of grammar exercises. These will then be related to the CING and grammar learning.

**Grammar tasks and exercises: a definition**

Grammar learning has always involved some kind of activity for practice (e.g., pattern drills, repetition), but with the advent of task-based language teaching (Long, 1985; Breen, 1987) practice activities received a counterpart, the 'task'. There were “target tasks” (Long, 1985, p. 89) and pedagogical tasks (Richards, et al., 1986) all with a non-linguistic outcome (e.g., drawing a map) after language has been understood or produced in a communicative context. Therefore, the language focus in a task is often on meaning more than on structure.

A more current definition of task states that a task is “a piece of classroom work that involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is focused on mobilizing their grammatical knowledge in order to express meaning”. In addition, the activity involved in the task should be complete with a distinct communicative goal (c.f., Nunan, 2004).

Grammar exercises on the other hand, are defined much less broad and complex. They are specific, repetitive activities with predetermined, structural language material (Segermann, 1992, p. 12, translated by the author). They are also specific in their learning goal, content and activity and this has made them the most common practice activity in grammar books and language classrooms. An exercise triggers learner knowledge in beginners and advanced learners alike which they relate to the activity (goal) of the exercises through the activity itself. Often these activities have a focus on grammar or language structure and act as the first step the learner takes towards communicating creatively. To ensure that exercises actually help in achieving communicative competence.
In the review of the CING we have so far discussed its structure and language material content, which leaves a discussion of the exercises. To understand how exercises work a classification by goal, linguistic activity, and content will be conducted and applied to the CING exercises. This will result in a descriptive classification of exercises that will inform the implementation of exercises in a language learning context.

Learning goal and gradation

Often exercises follow the introduction of a linguistic topic in order to practice it in a graded and controlled way, from simple and easy to complex and difficult. Exercises are also applied in for the learners' the transfer of learned knowledge into communicate situations or as 'advanced organisers' that help create learner awareness for particular linguistic content relevant to the learning situation or provide necessary knowledge for a later task (Raabe, 2003).

Each of these applications has a different requirement in learning and linguistic goals, topic and activity. Linguistic or learning goals include what the learner has to do. Is the goal of the exercise the acquisition of rule structures, the practice of rule structures in individual sentences or in communication or the identification of linguistic errors or grammatical meaning of language? Different types of activities can be used to achieve such goals.

The activity type indicates what the learner has to do in the activity and is related to activity content in that certain actions require particular content to be realized. In the classification of exercise activities it is important to consider if it is productive or receptive and what the content focus is, a linguistic, a meaningful (content) or a combination of both.

To present a comprehensive overview of types of exercises in grammar, I adapted a list of exercise typologies and prototypes that were constructed for German as a foreign language to systematically describe (typology) and relate the involved activity to the CING. First, I will present the typology that was adapted from Segermann (1992, p. 47).

1) Objective: is the activity of the exercise the identification of grammatical meaning or the production of correct grammatical forms?

2) Activity: what does the learner do? Work on the re-production of grammar structures (repetition, arrangement) or the modification of structures, productive or
receptive, is there a reference to the mother tongue (contrastive production of grammar structures, translation)

3) Material Design: How is the exercise linguistically presented? In individual sentences, texts or dialogues. How is it presented in media? In written, visual or auditive form? How are the linguistic units presented? In a cumulative, contrastive, incomplete, unordered or fragmented way?

4) Control: What information, instructions, aids to comprehension are given and which foreign language samples or models govern the activity and to what extent (e.g., predetermined information that gives clues to the solution of the exercise)

5) Method of operation: Is the exercise to be done at a particular place, with particular instruments, and in which social forms is the exercise to be realized?

The activity steps an exercise has can be classified with the help of these principles: from easy to difficult, from simple to complex, from closed to open, from little to extensive communication (c.f. Neuner et al., 1981; Häusermann & Piepho, 1996, p. 133). Every challenging topic or material profits from an introduction, and orientation as these steps help people to become more aware of what is coming in topic or activity. This process is also called 'cognitivization' (see Raabe, 2003, p. 284).

**CING grammar exercises: a classification**

The CING offers multiple-choice and gap-fill exercises for grammar structures on the *Exercises* pages and multiple-choice exercises for grammar rules on the *Discovery* pages. I will first present examples of *Exercise* pages and investigate them based on 2.3.1 and 2.3.2. In a second step, I will classify exercise examples from *Discovery* pages accordingly.

**CING exercises on Exercises pages**

To investigate the typology of the multiple-choice exercises in the CING we combine two examples (see Figure 13 and 14) from *Exercises* pages on the present perfect. Regarding the 'material design' of all exercises investigated, they are presented only in written form and visual illustrations (e.g., graphs) are not part of the exercises. The 'method of operation' in this
study is for all exercises a learner who works on his computer with an internet connection as instrument. With the application of the CING in a language classroom or a learning context with instructor this will change.

The 'objective' of the exercises (Figure 13) is the correct choice of a grammar structure from the predetermined set in the drop-down menu of each gap. In Figure 14 the exercise extends the correct choice of a grammar to the sentence level. The learner has to select the sentence that uses the grammar structure correctly. Each exercise requires the learner to identify the grammatical meaning of the sentence as basis for the choice of the correct form.

The learner has to select the correct linguistic form (Figure 13) or correct use of the form (Figure 14) as 'activity'. The information provided is not in the mother-tongue and except the instruction no further information is given. This selection is re-production and receptive in nature, as the learner has to understand the sentence and grammar structure meaning to select the correct answer. The selection itself is not a production of the grammar structure.

The 'material design' of the exercises (Figure 13 and 14) is a list of between 10 and 15 individual language example sentences, each with one selection activity and its meaning context that the learner can use to reflect make the correct choice. The presentation of the units of the exercise is cumulative and ordered (in a list).

The 'control' in the exercises (Figure 13 and 14) is performed by the instructions (e.g., Try and decide whether the given period of time ended in the past or lasts up to the moment of speaking (in some cases you need to use your common sense, see Figure 13). This instruction advises the learner to reflect a meaning aspect of the grammar structure to select the correct answer. The instruction in Figure 14 only contains the task to correctly choose between different sentences, reflection is not included. In none of the instructions has information on the particular grammar structure (present perfect or simple past) been not provided. Therefore, the learner has to reflect on the meaning of the two grammar structures and know their use with regards to the end of a period of time.
The exercises on the *Exercises* pages and the *Discovery* page have the same 'method of operation' and 'material design' and there are other similarities. For the classification we will investigate two *Discovery* exercises (Figure 15 and 16) in combination.

The 'objective' of the *Discovery* exercise (Figure 15) is the correct choice of a sentence that represents the same meaning (of the present perfect) as previous example sentences. This exercise has two activities. The first activity is the identification of the grammatical meaning in the ticked example sentences (Figure 15) and apply this understanding in the selection of sentences with the same meaning in the second activity (Figure 15 bottom). In Figure 16 the objective is the correct choice of correct statements on the rule of the past perfect. First, the learner has to reflect on the use and meaning of the past perfect with a set of authentic language examples. Based on this reflection the decision of the correct grammar rule is to be made. Both exercises (Figure 15 and 16) have the identification of grammatical meaning as objective.

The learner has to select the correct sentences (Figure 15) or correct rule formulation (Figure 16) as 'activity'. As support, the pages provide extensive instruction which also includes reflection (see Figure 15) and large sets of language examples (Figure 16) for the user to reflect on. The activity for both exercises is reflective and receptive in nature, as the learner has to understand the sentence and grammar structure meaning to select the correct answer. The selection itself is not a production of the grammar structure, but a result of reflection on the use of grammar structures in authentic language.

The 'material design' of the exercises (Figure 15 and 16) is a list of individual example sentences and a selection task with a set of answers to chose from. These answers are example sentences that need to be selected for meaning (Figure 15) and rule formulations on the past perfect (Figure 16). Similar to the material on the *Exercises* pages, each language example on the *Discovery* page has an individual context of meaning that the learner can use to reflect and make correct choice. The presentation of the language examples of the exercise is cumulative and unordered (in a list). The learner has to find order through reflecting on the meaning of the grammar structure.

The 'control' in the exercises, similar to the *Exercises pages*, is performed by the instructions (e.g., *We have marked some of the sentences, where the choice of present perfect has a particular effect on the meaning. Look at them carefully and see if you can identify the*...
special meaning, see Figure 15) in combination with the modified language examples (the sentence with the meaning in question is ticked). The instruction advises the learner to reflect on the meaning of the modified language examples (first activity). Based on this reflection the second activity, selection of sentences with the same meaning from a list of language examples has to be concluded. Figure 16 shows a set of grammar rule formulations on the past perfect that need to be selected for correctness, based on former reflection on language examples. Every discovery page has the introduction part with reflection activities and

Figure 13: Multiple-choice (drop-down) exercise (Exercises page)

finishes with a selection task on rules. This selection task offers the learner confirmation on his or her own hypotheses on grammar rules.
Figure 14: Multiple-choice (simple) exercise (Exercise page)

Figure 15: Multiple-choice exercise: present perfect meaning (Discovery page)
Finally, the aspect of gradation of exercises needs to be investigated with the content pages. Within the content pages gradation takes place via introduction / instruction and the sequence of exercises and language examples. Within the exercises, that are designed very restricted, gradation does not place. This form of gradation in the CING can be considered a cognitivization that prepares learners for material or activities and eases the learning process.

This classification of exercises revealed that all CING exercises involve the identification of grammatical meaning or correctness of use as an 'objective' they are all receptive and not productive in 'activity' and lack auditive and visual presentation forms. The Exercises and Discovery exercises differ considerably in the instructional information. While the Discovery exercises always begin with extensive instruction on reflective activities to aid the final rule selection (confirmation), the Exercises instruction is simply an instruction for the activity. This unique combination of authentic language examples, instructions on reflective grammar activities and multiple-choice activities turns the Discovery exercises into a mix of exercise and task. They aid in the practice of grammar knowledge, as well as in the
development of an intuition for language, the learners’ Sprachgefühl. In contrast, the Exercise exercises are mere drill exercises if used out of another teaching related context only in the way the CING presents them.

2.4 Summary and conclusion

This chapter started by discussing the linguistic theories of Functionalism, Generative-Transformationalism and Cognitivism. In combination with applied linguistic approaches to grammar learning a basis was formed for the informed conceptualization of the CING. The main finding of this discussion is that the CING does not directly reflect theories of grammar but adapted individual aspects of each theory and ideas on grammar learning that are integral parts of its own unique concept.

These parts are the authentic language examples, the material arrangement and meaning-focused exercise instructions which represent the ways to learning grammar with its relation to meaning and with a view to its function in real language, extensive exposure to authentic language use via exercises and the experience of discovering rules through analysis and comparison of authentic language. All these are in some way integrated into the investigated theories, while many theoretical principles could not be applied to the CING.

From there the discussion became more applied when a detailed description of the CING through concepts of grammar description and reference and pedagogical grammar was conducted and a typological investigation of its exercises completed. As a result, the CING revealed its potential as a reference / pedagogical grammar despite a low count of metalanguage and the lack of pedagogical support measures. It also proved to be an appropriate for the development of Sprachgefühl and grammar rule hypotheses testing, a learning step favored and advocated by many (as cited in Fandrych, 2010; Ellis, 2002; Multhaup, 2002).

In the context of this complex approach to the conceptualization of the CING as a grammar, it became clear that many assumptions and applications in models and theories made about the CING depend largely on its user group and the approach the group takes to learning with the grammar. The next chapter will describe the study’s user group, learning behavior in the CING and other issues related to users and the use of the CING (e.g., hypertextual learning, presentation of the simple past and present perfect in the CING) to give the research study of the CING a focus.
3. Learning with the CING

Previous studies (e.g., Heller, 2004a, 2004b) indicated that the CING can be successful as a learning tool, but can also cause difficulties for learners. These studies could not prove the tool’s success for language learning, making an evaluation of its underlying theory, content presentation, and, finally, its “performance” with learners necessary. In the following, I will contextualize the CING within theories of second language acquisition, hypertext teaching and learning, and autonomous learning in order to evaluate it as a learning tool, self-instruction tool, and hypertext online grammar. In addition, this chapter will include a presentation of my research design that combines quantitative and qualitative research measures and is based on relevant research in the field as well as former studies with the CING.

3.1 Simple Past and Present Perfect

“Tense-aspect morphology occupies a central place in the curricula of many language programmes” (Bardovi-Harlig, 2000, p.1) and it represents an area that learners often do not fully acquire until an advanced language level has been reached. For German native speakers learning English, tense and aspect promise to be particularly challenging as past tense forms in the German language are constructed without the use of aspect. In order to ensure, that the research subjects in the study were presented with a topic they hadn’t yet fully mastered, the grammatical structures Simple Past and Present Perfekt were chosen as learning content for this investigation. Thus a real learning benefit through working with the CING could be achievable.

In her study of French post-intermediate and advanced learners’ English language corpora, Granger (1999) found that even advanced French learners of English did not necessarily completely comprehend the language’s grammatical structures. Her study revealed a “less than 20% improvement rate for the simple past and the present perfect” (Granger, 1999, p. 94) in the advanced learner language corpora compared to post-intermediate levels. A study on the acquisition of tense and aspect by adult learners found that “the present perfect is [without a doubt] a source of error” (Dürich, 2005, p. 98). The English language placement tests taken every semester by Chemnitz University’s first-year students appear to support this finding, with results indicating what other researchers have found:
considerable learner problems in the correct application of the simple past and present perfect (Hewings, 2005).

Why learners fail to master particular grammar structures can be due to various reasons. Structural complexity of the form to be learned can be one, since the more elements a structure has, the more complex it is (Thornbury, 1999, p. 9). The simple past is less complex than the present perfect, because it only requires the simple past form of the infinitive verb (regular verbs +-ed or the irregular verb form) and not the modal verb 'has'.

Transfer from the learners' mother tongue to the foreign language can be another reason. Although there is no common consensus, a growing body of research in second/foreign language acquisition “indicates that transfer is indeed a very important factor in second language acquisition” (this is termed the contrastive hypothesis; see Odlin 1994, p.4, Nunan, 1994, p. 254). I follow Sammon in assuming that one of the reasons for the above problems of learners of English as a second or foreign language could be related to the influence of their native language (Sammon, 2002). Thus French, as well as German, allow for the use of the past and perfect tenses “interchangeably in many contexts, the difference between the two tenses being largely stylistic” (Sammon, 2002, p. 48). English does not allow for this freedom of use, as it distinguishes the past in its semantic function clearly from the (present) perfect (Sammon, 2002, p. 47). Nevertheless, “both can be used to refer to a state of affairs that existed for a period of time” in the past (Biber et al., 1999, p. 467).

I will now look at how the simple past and present perfect are presented in current grammar works and compare it to the CING’s content structure and presentation.

**Approaches to tense and aspect**

Leech and Svartvik (1992) state in the introduction to their *Communicative Grammar of English* that “the conventional way of presenting English Grammar in terms of structure […] has a certain drawback in itself”. In their opinion “notions of time may be dealt with in as many as four different places: under the tense of the verb, under time adverbs, under prepositional phrases denoting time and under temporal conjunctions and clauses” (Leech & Svartvik, 1992, p. 4). For my comparison, I chose those grammars that, like the CING, function as a reference, and, possibly, pedagogical (textbook) grammar (e.g., Quirk, Greenbaum, Leech, & Svartvik, 1985; Biber, Johansson, & Leech, 1999; Huddleston & Pullum, 2005; Carter & McCarthy 2006), grammars with authentic example material from
language corpora (Leech & Svartvik, 1992; Biber, Conrad, & Leech, 2002; Carter & McCarthy, 2006), and grammars that have been written with the advanced English language student in view (Greenbaum & Quirk, 1990; Leech & Svartvik, 1992; Hewings, 2005; Biber, Conrad, & Leech, 2002; Sammon, 2002; Huddleston & Pullum, 2005; Carter & McCarthy, 2006). Second, I consulted more comprehensive grammar works that draw on the history of language (Greenbaum, 1996) and open new perspectives in the description of English grammar (Mukherjee, 2002; Huddleston & Pullum, 2002) in order to assess those aspects of the CING content aimed specifically at linguists.

In her in-depth discussion of tense and aspect in language learning, Bardovi-Harlig distinguishes between the grammatical aspect and the lexical aspect (2000, p.213), both of which she considers relevant for acquisition. The grammars I reviewed all integrated tense and aspect in the topic area of “verb phrase.” In Quirk, Greenbaum, Leech, and Swartvik’s (1985) A Comprehensive Grammar of the English Language, tense and aspect appear in the chapter “The semantics of the verb phrase” under the heading “Time, tense and the verb,” which follows their introduction to verbs and auxiliaries (Quirk, Greenbaum, Leech, & Swartvik, 1985, pp. 96ff). This arrangement of grammatical categories reflects the relation between the morphology of verbs (e.g., “The past form and the –ed participle” [Quirk, Greenbaum, Leech, & Swartvik, 1985, p. 100]) and their tense and aspect.

The same topics and chapter structure, although a less detailed and extensive treatment of the topics, can be found in A Student’s Grammar of the English Language (Quirk & Greenbaum, 1990). Greenbaum explains the relevance of the structures of verb phrases (finite and non-finite verb phrases) for the description of tense and aspect (Greenbaum, 1996, pp.253-254ff): English has only two tenses “if tense is reflected by verb inflection” and only two aspects, which “are expressed by a combination of an auxiliary and a following verb” (Greenbaum, 1996, p.253). In this grammar Greenbaum discusses the relevant morphological representation of Tense and Aspect in the verb long before proceeding to the semantic meanings of both verb phrase structures whereby, the reader can be expected to have covered how to form the simple past or present perfect correctly in the verb phrase.

Biber, Conrad, and Leech (2002) take a comparable approach, explaining that tense can appear in finite verb phrases (which “can be marked for tense” Biber et al., 2002, p.150) and aspect in non-finite verb phrases, while both are two of “six major kinds of variation in the structure of verb phrases” (Biber et al., p.149). The authors go on to discuss the meaning and usage of the different tenses and aspects (Biber et al., pp.156-162) in more detail, pointing out that “tense can be used to mark past and present and refer to future time. Aspect
adds time meanings to those expressed by tense. Aspect answers the question ‘Is the event/state described by the verb completed, or is it continuing?’” (Biber et al., 2002, p.156).

Huddleston and Pullum (2002, 2005), on the other hand, begin by presenting “inflectional categories of the verb” from a morphological point of view (Huddleston & Pullum, 2002, p.74), dividing verbs into lexical verbs and auxiliary verbs. In their description, “only lexical verbs can carry verb inflection to more complex and notional uses [e.g., backshift in the simple past] of both structures” (see Huddleston & Pullum, 2002, pp. 86 and 151). Their approach also differs from the other grammar works in that they identify the simple past and the present perfect as past tenses, while the other grammarians agree that the simple past is a tense and the present perfect an aspect. Given that the CING also operates from this assumption, I will bracket this part of Huddleston and Pullum’s (2002, 2005) presentation in the following discussion.

In contrast to this detailed approach, Leech and Svartvik (1992) include their descriptions of tense and aspect in the “Meanings expressed by the verb phrase” section of their “Time, tense and aspect” chapter (Leech & Svartvik 1992, p. 65) and only subsequently provide definitions of tense (“the correspondence between the form of the verb and our concept of time [past, present and future]”) and aspect (“concerns the manner in which a verbal action is experienced or regarded, for example as complete or in progress”) (Leech & Svartvik, 1992, p. 400).

Sammon’s Exploring English Grammar (2002), Murphy’s English Grammar in Use (2000), and Hewings’ Advanced Grammar in Use (2005) all take different approaches to describing tense and aspect. Sammon presents the most in-depth approach, with a definition of tense and aspect in his third chapter “Tense and aspect: The progressive,” followed by an overview of the simple past and present perfect in the fourth chapter, “Tense and aspect: The perfective.” The overview is divided into normal pattern (usages and verb types involved in the perfective aspect) and exceptions (Sammon, 2002, p. 47). This if followed by nine pages of exercises on the different aspects of the chapter’s content. Similar to Leech and Svartvik (1992), Sammon’s focus remains on the meaning and usage of the grammar structures in question, as is reflected in the amount of exercises included in the work. (Among the grammars analyzed here, only Sammon, Murphy, and Hewings provide exercises). Murphy (2000) and Hewings (2005) provide less extensive but concise and clear descriptions along with examples. They discuss tense and aspect in their chapter “Tenses,” but do not
provide definitions or information on their morphological representation. These grammars concentrate on usage and give a rather superficial linguistic description of the grammar compared to the approaches discussed above.

Of the grammars surveyed above, the CING’s approach to describing tense and aspect compares best to that of Sammon (2002) in structure and content. In both works, the chapter titles include the topic terminologies (“Tense and aspect: The perfective” [Sammon, 2002] and “Tense/Aspect” in the CING). Furthermore, both works present the reader with occasional information on other languages (see Sammon, 2002 and CING “Tense/Aspect - Perfect forms – Preliminaries”), as well as with various exercise materials (without comprehension in Sammon’s work) in each chapter.

For those who use grammars for revision or as a reference, the topic allocation in Murphy, Hewings, and the CING appears most clear and explicit, in comparison to more thorough or linguistic approaches (e.g., Biber, Conrad, & Leech, 2002; Quirk et al., 1985; Greenbaum, 1996), where tense and aspect are often “hidden” under chapter names that do not directly relate to them (e.g., “The semantics of the verb phrase” in Greenbaum, 1996). Despite this clarity of content structure, the CING fails to provide learners with definitions of the terms “tense” and “aspect” in its content pages, where they are included in other grammar works. Instead, the CING relegates the definitions of both terms to its Glossary.

The CING Sitemap (Figure 17) on the present perfect and simple past seems to present a clear content structure, with the category “Tense/Aspect” representing the top level. However, under “Tense/Aspect” the user can then choose between continuous forms, perfect forms and (among others) perfect continuous forms on the second level.

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15 All of the examples in both works are highlighted in the morphologically relevant parts but include no information on e.g. verb formation.
Figure 17: CING Sitemap on Tense/Aspect

The category title “Perfect Forms” is likely to direct a user in need of information on the present perfect to the correct topic pages, but none of the other sub-chapter headings refer directly to the simple past. Thus it could appear to users that the simple past only has a very few rules and uses whereas the present perfect is much more complex.

I will now take a closer look at the CING’s simple past and present perfect materials to establish how complete and clear they are, and how they compare to other grammar works.

**Simple past and present perfect**

Biber et al. (1999, p. 454) give a general definition of the past tense as “most commonly refer[ing] to past time via some past point of reference” while “the present perfect is used to refer to a situation that began sometime in the past and continues up to the present.” The authors also provide information on how to apply the past tense and present perfect in order to express various meanings of past time and even present time (Biber et al., pp.467-8). Since Biber et al. (1999) present the simple past most comprehensively I base my overview of the various works’ treatment of it on their content. The simple past refers to the following primary (Greenbaum, 1996) or common uses (Quirk et al., 1996): a past point in time, a situation or “event(s), habit(s) and state(s)” Quirk and Greenbaum, 1990, p. 50) which were

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16 The terms past tense and simple past are used interchangeably here, although most authors use one or the other: “simple past” (Greenbaum, 1996); “past tense” (Biber et al., 1999; Biber, Conrad, & Leech, 2002).
“completed before the time of speaking” (Greenbaum, 1996, p. 254), are “separated from the present” (Sammon, 2002, p. 51), or “which the speaker sees as complete” (Sammon, 2002, p. 47). The CING (“Perfect: Yes or no?”) defines the point in the past as “fixed” and “completely in the past.” The historical use (Quirk, et al., 1985; Sammon, 2002, p. 52) of the simple past is closely related to the primary use definitions, as it also refers to a past point in time that is completed (historical event, biographical statement about an already dead person).

In addition to these common uses (Biber et al., 1999), Quirk and Greenbaum (1996) identify special uses of the simple past. These are in reference to: present time (with the use of verbs like think and wonder), also referred to as attitudinal past (e.g., Quirk et al., 1985; Quirk & Greenbaum, 1990; Greenbaum, 1996; Sammon, 2002); reported speech, also termed indirect speech (Quirk & Greenbaum, 1990) or backshift (Greenbaum, 1996); and hypothetical meanings (Quirk et al., 1985; Quirk & Greebaum, 1990; Greenbaum, 1996; Sammon, 2000).

Biber et al. (1999) also cover the group of adverbs to be used with the simple past (see also Quirk & Greenbaum, 1990; Quirk et al., 1985), which help locate the situation described inside a past period that is already completed.

The CING and Sammon (2002) restrict their discussion of the use of the simple past with adverbs to since (Sammon also includes for; see [2002]; see my discussion of the present perfect, below) in the following way: the CING only discusses since as a causal conjunction which entails no change of the verb forms in the sentence (see CING page Since: Problem). Sammon, on the other hand, refers to since as a temporal conjunction between clauses. He explains that “if the subordinate clause, to a main clause holding the Present Perfect, describes a situation that is already completed, it has to hold the Simple Past. If the subordinate clause, however, describes a situation that took place simultaneously to the situation in the main clause (which is in Present Perfect), it has to be ‘Present Perfect’” (Sammon, 2002, p. 48).

This comparison of the descriptions of the simple past in various grammar books with that in the CING shows that the latter presents only a part of what the simple past entails in usage and meaning. It does not introduce the user to the special uses of the simple past (Quirk & Greenbaum, 1990, p. 51), that is, the attitudinal past, which applies in conversation, and the backshift (simple past in indirect/reported speech) in writing and conversation. Furthermore, there is no reference given to “since” as a temporal conjunction, or to the
The grammar works I surveyed defined the present perfect as follows: the present perfect is “used when the period of time is regarded as incomplete” (Sammon, 2002, p. 50). It “refers to a situation in the past time that is viewed from the perspective of present time” (Greenbaum, 1996, p. 253). It designates events or states that take place during a period in the past leading up to a specified time or are anchored in the past with relevance to now (Biber et al., 1999, p. 460). It bridges the gap between a past point where “the sth.” (i.e., action/event) is anchored and the current moment (CING: Simple Past).

All definitions agree that the situation described in present perfect establishes a connection between a past point in time and now (the time of speaking), either by means of relevant information or by continuing the situation.

Quirk et al. (1985) and Greenbaum (1996) present the most comprehensive explanation of present perfect usage that most commonly refers to: state(s) leading up to the present; (indefinite) event(s) in a period leading up to the present; and habit (in a period leading up to the present). Quirk et al. (1996) also present variants of present perfect usage: situations that have indefinite past meanings that are recent, as well as situations where the result is obtained at the present moment (of speaking). This includes the use of the present perfect in news (see also Biber et al. 1999, Sammon 2002 [p. 54 “Shift from Perfect to Past”]) as one type of variant.

Most grammar works supplement their definitions with a brief discussion on the adverbials to be used in the present perfect (see Biber et al., 1999; The CING; Quirk et al., 1996; Sammon, 2002). Sammon concludes his chapter on tense and aspect with the statement that the simple past and present perfect “can refer to the same situation, but they see this situation from different points of view” (Sammon, 2002, p. 49), which has various implications for usage.

The CING content does not provide information on all rules of correct present perfect or simple past usage. While it includes a brief discussion on the usage of the adverbials for and since with the present perfect, the CING does not introduce the application of the structure in news reporting, in the expression of habitual behavior leading up to the present, nor the exceptional use of the present perfect with adverbs that signal the simple past. This type of grammatical information on the application of structures for particular language genres and exceptional situations can be especially important for intermediate learners aiming to become advanced learners.
The grammar information on the simple past can be found in the CING under the page title “Simple Past” as well as under the topic area titles “Continuous Forms (Simple Past)” and “Perfect Forms/Present” (e.g., “Talking about the Past, ST and RT”). Important metalanguage (speech time and reference time) on the simple past appears on the “Simple Past” page under the area title “Continuous Forms.” Although the terms might become clear in the graph on the simple past explanation page, the material lacks clear definitions. The glossary listing of the terms enables users to review the term and its meaning before heading to SP and PP material pages.

Target learners at the CUT have in the past displayed a lack of comprehensive knowledge of the simple past and present perfect, and the CING content can support this particular learning group and environment. For more advanced users, however, the CING exhibits a considerable lack of scope and depth on the simple past. This lack must be overcome for the CING to become an appropriate learning tool for a wide range of learner knowledge levels.

### 3.2 Theoretical aspects of Second Language Acquisition

Following Gass & Selinker (2008, p. 5), I understand the area of second language acquisition to be a complex one whose focus is the “attempt to understand the processes underlying the learning of a second [or foreign] language” (see Gass & Selinker, 2008, p. 5; Norris & Ortega, 2000, p. 717) after the first has been learned.17 The study of second language acquisition presents “a firm basis for [language teaching] methodologies in language learning” (Gass & Selinker, 2008, p. 3).

The scope of most grammars shows that the acquisition of a foreign language entails more than just grammar (e.g., sound systems, syntax, morphology and the lexicon, semantics and pragmatics; Gass & Selinker, 2008). In contrast, the CING only contains written/textual information on grammar, supported by an English-German language corpus. In the following discussion of the theoretical background to learning English grammar with the CING, I will thus focus on those theories of second language acquisition (SLA) applicable to the learning situation with the program.18 While the research area of SLA “draws on multidisciplinary

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17 “Acquisition” is treated here as similar in meaning to “learning.” While learning entails more than mere learner improvement in grammar test results, the scope of this study restricts the term’s meaning to the measurable learner improvement documented below.

18 This excludes areas that “fall outside of the domain of language-related variables but that impact the acquisition of a foreign language,” such as social, age, and affective factors, as well as aptitude, motivation, and
theoretical and empirical perspectives to address the specific issue of how people acquire a second language” (Larsen-Freeman, 2000, p. 165), it also involves such core topics in cognitive psychology and linguistics as “implicit and explicit learning, incidental and intentional learning, automaticity, attention and memory, individual differences, variation, language processing etc.” (Doughty, Williams & Saunders 2004, p. 6). The majority of research on language acquisition is based on different types of interaction (e.g., one-way information exchange [Long, 1980a] or introspective techniques, e.g., diary study [Brown, 1985], [Ellis 1994]). This is of considerable importance to the following discussion, as the CING is a self-instruction tool with a hypertext structure that presents learners with a quite different material structure and requires different learning strategies than do paper/pencil-based language support tools. Learning with the CING is dependent on the “input text” it provides rather than “input discourse” (c.f. Ellis, 1994), which is a significant factor in the majority of SLA studies.

These SLA theories, then, as represented by the works referred to above, cannot be expected to fully apply to learning with the CING. Once the CING is integrated into a learning situation comparable to those studied by the authors above (e.g., classroom English-language learning, teacher-guided small-group acquisition) different theories will apply than in the self-instruction situation this study considers. The following discussion of the theoretical background always keeps the autonomous learning situation of the CING in mind.

3.2.1 Application of SLA theory in CING research

In the following I will review former research findings on topics relevant to this study. Based on this review these topics were formulated into a list of assumptions I had about learning with the CING, hypertext and autonomous learning. The background to these assumptions, that I also call research hypotheses, will be discussed in the following.

− The more English-language skills learners have, the better they will understand the CING and the better their CING work experience will be (Heller, 2004b).

learning style and strategies (Gass & Selinker, 2008, p.445). While I agree with Gass & Selinker that these factors must be considered when investigating learning holistically, this study’s main aim is to evaluate the CING, and consequently my discussion of the various factors impacting language learning will focus mainly on the unique nature of the program as an autonomous and hypertext self-learning tool. For an overview of other theories on language acquisition and learning see McLaughlin (1987) or Ellis (1985).
- Authentic language material can contain vocabulary that is unfamiliar to intermediate learners. This also applies to the CING grammar material, which is largely based on an earlier CING version written for advanced learners and EFL teachers (Heller, 2004a).19

- Comprehensible language material (rules and language examples) can support language acquisition with the CING. (Long, 1983, Larsen-Freeman & Long, 1991, Ellis, 1994)

- The explicit and formal teaching of language structures supports the short-term acquisition of these structures (Lightbown et al., 1980; Ellis, 1994).

- The grammar structures in the CING material have been sufficiently highlighted for learners to notice them (Doughty, 1991) but might not be sufficient for successful learning (Doughty, 2004; Jourdenais, 1998).

- Feedback promotes learning as it helps learners to notice mistakes in their language production and informs them about their level of applied grammatical competence (Schimmel, 1983; Gass & Selinker, 2008; Bangert-Downs, Kulik, Kulik & Morgan, 1991).

- Learning with a hypertext differs considerably from traditional learning (see Tergan et al., 2000; Tergan & Lechner, 2000; Jacobs, 2004). Successful goal-oriented navigation and orientation in the hypertext structure can require support measures (Brunstein, Naumann & Krems, 2004, p. 3831; Naumann, Waniek, Brunstein & Krems, 2003) the CING does not contain (e.g. explicit scaffolding support: Rouet, 1992; Jonassen, 1993; Jacobsen et al., 1995; guided tours, hypertrails, dynamic paths: Gerdes, 1997).

- Autonomous learning strategies help learners to define learning goals, select relevant learning materials, and apply appropriate learning steps and strategies for their task (Holec, 1981; Little, 1991; Ziegler et al., 2003; Tergan, 2003).

- Learning strategies can be learned (Bannert, 2003).

Preliminary small-scale studies on the CING I conducted with a subject group similar to the one in this study (Heller, 2004a/b) showed that the tool’s language material can cause comprehension problems to learners. Language examples and grammar rules material in the CING was designed on the basis of material developed for advanced learners or teachers. Although other grammar provide even more in-depth analyses of the use of grammar structures, the rule material and language examples in the CING were designed for advanced learners or teachers. This is particularly true for the content materials on the simple past and present perfect.20 Both preliminary studies suggested that learners had problems with unknown vocabulary in the rule and language material. There was also evidence that learners with a better score in their last English-language exam appeared to have fewer difficulties

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19 This is more a statement of fact than a hypothesis, but since it stayed relevant throughout the development of the research measures I include it here.

20 The designers of the CING considered the grammar graphs in the tense/aspect materials to be especially useable for advanced learners of English (Schmied, 1998). They were partly based on Reichenbach’s (1947) concepts and presented speech time versus reference time as central to verbal time relations.
with material comprehension (Heller, 2004b). Disorientation while using the CING’s grammar material and during material search, however, was an issue for all subjects in the study (Heller, 2004a). While disorientation is an issue directly related to learning with hypertext (see below), hypotheses 1 and 2 were formulated to investigate the reasons for learners’ difficulties with the CING material.

Hypothesis 3 calls for only comprehensible input in order to make successful learning possible, pointing to the relevance of input theory. Hypothesis 4 on the merit of instruction in SLA, relates to the domain of “instructed SLA,” including formal instruction theory in general, the teachability hypothesis (Pienemann, 1984, 1985, 1989), and the weak interface hypothesis (Ellis, 1990). I will also investigate the concept of salience of input material (hypothesis 5) and feedback in language learning (during instruction) (hypothesis 6) in SLA studies and relate it to the CING pedagogical grammar content.

### 3.2.2 Input in SLA

The term “input” in the hypotheses above refers to language and grammar material, including the grammar structures that the CING provides to the user. Ellis writes that “input may come in written or spoken form” (1994, p. 26). The CING, however, is a self-instruction tool, while a lot of SLA theories were built on studies or observations that involved spoken input in learning situations (e.g., classroom studies) but not autonomous learning. Overall in SLA research, input is closely connected to output and interaction (Gass, 2003), but learning with the CING only provides restricted opportunities for the latter. The CING’s aim is rather to help learners hone their receptive skills by studying the authentic language material and practice their productive skills in the grammar exercises.

*Input Comprehensibility: Hypotheses 1, 2, and 3*

In the following discussion, I will consider input in terms of the CING’s (written) input form, leaving aside input interaction (Long, 1996) and input negotiation (Pica, Young & Doughty, 1987) for now.

The importance of comprehensible input in language learning seems evident (see Long, 1983, Larsen-Freeman & Long, 1991), but its operationalization in the learning situation is less clear. While some support the opinion that comprehension benefits from the
input’s modification through interaction (e.g., Pica, Young & Doughty, 1987), others argue that learners can learn information about an L2 without necessarily completely understanding this (e.g., unmodified) input (e.g., Larsen-Freeman, 1983).

A more specific approach to input in language acquisition is taken by Gass (2003), who considers input as “evidence” in either “positive” or “negative” form. Positive evidence is input consisting of “well-formed sentences to which learners are exposed” (Gass, 2003, p. 224) in spoken, written, or visual (sign-language) form. Negative evidence is information learners receive about the incorrectness of their language production in form of, e.g., an utterance (explicit) or a recast (implicit). This can be reactive as well as preemptive to the learners’ language production, but is directly associated with an interactive situation between learners and the evidence provider (e.g., teacher) (Gass, 2003, p. 225). In general, Gass considers positive evidence the most important aid to learning, since “one must have exposure to the set of grammatical sentences in order for learning to take place” (Gass, 2003, p. 226). She sees “output” (learners’ language production) as a requirement for language learning, since it forces learners to “impose syntactic structure on their utterance” (Gass, 2003, p. 227). A lack of conclusive research on negative evidence makes it difficult to comment on its role in language acquisition (Gass, 2003, p. 226).

Ellis concludes that “comprehensible input can facilitate acquisition” but it is neither a necessary condition for acquisition, nor does it guarantee acquisition (Ellis, 1994, p. 279). This means that the comprehension difficulties learners with weaker language skills had with the CING need not necessarily obstruct learning with the program per se. Nevertheless, material comprehension can play an important role in the usability of the CING. Incomprehension can lead to frustration and demotivation, especially if support is missing. Hypotheses 1 and 2 thus refer to a more usability-focused aspect of this research, while hypothesis 3 relates to the impact on learning that CING material comprehension (or the lack thereof).

**Noticing of input: Hypothesis 5**

Input also supports SLA in that language acquisition “is largely driven by what learners pay attention to and notice in target language input and what they understand the significance of noticed input to be” (Robinson and Ellis, 2008, p. 375). A “gap” in learners’ knowledge might lead to non-target language production that is noticed by learners (Gass, 2003) through input
or their own reflections on their erroneous output. According to Schmidt’s noticing hypothesis (2001), noticing means that learners focus their attention on “elements of the surface structure utterances in the input – instances of language, rather than any abstract rules or principles of which such instances may be exemplars” (Schmidt, 2001, p. 5).

Since input can occur in written as well as spoken form, learners’ noticing takes place either on a textual level or on an orally received language level. For example, a teacher can draw learners’ attention to a persisting problem as soon as it arises “during language use” in the learning situation. This pedagogical intervention through auditory recasting or commenting constitutes an important part of teaching that focuses on correct language production (Doughty & Williams, 1998; Long, 1988, 1991; Long & Robinson, 1998) and has been termed “focus in form” (FOF) (see Ellis, 1997).

Research on FOF has found that learners “benefit most from concentrated simple recasts (or one or two elements) of aspects of language for which they are developmentally ready” (Doughty, 2004, p. 289).21 The individualized correction teachers are able to provide increases the salience of the features in question and makes them more learnable for students (Lightbown & Spada, 1990). Written forms of noticing support in language input are less individualized but nevertheless varied. In general, grammar books (whether grammar works or textbooks) use mainly visual highlighting (e.g., italicizing, bold type and coloring) as noticing support. The CING uses color-coded grammar structures within the language examples and rule information within the grammar and language material. Grammar structures are also presented in the form of graphs, where applicable, in order to visualize the grammar concept the structure in question is showing.

Some research on visual input enhancement (e.g., color-coding) indicates that font manipulation or color-coding might not be salient enough for learners to notice (see Doughty, 2004) and that auditory enhancement of input proves more effective (Jourdenais, 1998). On the other hand, research on CALL materials found that visual highlighting of linguistic forms led to improved noticing and acquisition of the structures by learners (Doughty, 1991). To my knowledge, no studies exist that investigate the merit of visual graphs to teach grammatical concepts, which is why I can only rely on my study subjects’ response to these models. A preliminary small-scale study of CING usage I conducted prior to this project indicated that graphs can potentially present a better way than just text of visually presenting grammar to learners.

21 On developmental readiness, see my discussion of Pienemann’s (1984) teachability hypothesis, below.
To sum up, research suggests that input salience which leads to learners’ noticing does require instructional support (Peckham, 2000; Chapelle, 2001; Doughty, 2004), especially when the structure taught is demanding or difficult for the learner (Lightbown & Spada, 1990; DeKeyser, 2004). Furthermore, input is considered to be more salient or better noticed if learners are ready for it in their language/grammar knowledge (Pienemann, 1984; Doughty, 2004), although the input does not have to be completely understood for noticing to take place (Ellis, 1997). Overall, forms that are frequent (in input) and are noticed by learners are potentially more learnable than infrequent and non-salient forms (Hatch & Wagner-Gough, 1975).

**Preliminary Summary**

In contrast to most learning scenarios in SLA research, the CING is a self-instruction tool with authentic language and advanced grammar materials that have previously shown to be problematic for CING users. To ensure usability with the program, it must be determined if material (input) comprehensibility does affect learning with the CING (hypothesis 3) and if the material supports learners’ noticing of relevant information (hypothesis 5).

Research to date indicates that comprehensible input is not a necessary, but merely a helpful component of language learning. Thus, even if some of the CING material is incomprehensible to learners, this might not prevent them from successfully learning with the program. Nevertheless, comprehensibility remains an important factor in learners’ experience with the CING and merits inclusion in my study.

Research on input in SLA has found that color coding (as used in the CING language and grammar material) might not be sufficient for learners (hypothesis 5). The scope of this study does not allow for an investigation of learners’ noticing in particular but of the CING's quality of material presentation to self-instructed users. The better the material is presented, the more the learner notices and the more he can learn. Future research should investigate if a lack of noticing takes place in learning with the CING, which would become apparent in the interview session with the study's subjects or could translate into equal test results before and after CING work. Another important aspect is the experience learners have with the coding types (i.e., color, graphs) the CING material includes, as negative experience could lead to impaired noticing results. Overall, hypotheses 1, 2, 3, and 5 are the most relevant to my research.
3.2.3 Instructed SLA

*Instruction and the CING: Hypothesis 4 and 6*

Understanding the effectiveness of instruction entails an analysis of the type of instruction (Gass & Selinker, 2008). Ellis distinguishes between “natural” second-language learning “that takes place in naturally occurring social situations” and “instructed” acquisition through study “with the help of ‘guidance’ from reference books or classroom instruction” (Ellis, 1994, p. 12). In general, instruction is considered potentially effective provided it is relevant to learners’ needs (see Long, 1983a, 1988; Norris & Ortega, 2000; Ellis 2001), while research also indicates that “adult SLA is more difficult, slower and less successful” without instruction (Doughty, 2004, p. 256). Ellis (1990) also states that “teaching can be viewed in two different ways: (1) as interaction and (2) as formal instruction” (Ellis, 1990, p. 130). As already noted, the CING neither includes interaction between parties, nor does it actively instruct its users. The CING can only indirectly instruct users as long as they consciously read the material and follow or notice the pointers it gives on grammar rules and meaning.

Language-acquisition research exhibits various approaches to language instruction. Those most relevant to current language instruction are **processing instruction** (Van Patten, 1995), which “specifically focuses on form-meaning relationships” (Gass & Selinker, 2008, p. 373); **task-based instruction** (Ellis, 2003), which focuses on the instruction of language via, e.g., communication tasks where learner and teacher or learner and learner interact communicatively in a way that aims to support the learning of more than just a specified feature of the L2 (Ellis, 1994); and **formal instruction** (Long, 1983b, 1988; Ellis, 1985, 1990; Larsen-Freeman & Long, 1991) where a specific aspect of the language to be learnt (e.g. *Simple Past* and/or *Present Perfect*) constitutes an item in the teaching syllabus. Formal grammar teaching involves focusing on the selected aspect through exercises and it can be divided into explicit and implicit, while both entail some form of direction of (learner) attention (Ellis, 1994). This direction of attention can also be distinguished into “focus on form” and “focus on forms” (Long, 1991).
3.2.3.1 Formal Instruction

Of all current approaches to language instruction, formal instruction is most relevant to the CING, as the program’s material was designed to help learners “reflect on the formal features of the language” (Ellis, 1990, p. 188) which is an important part of formal language teaching. I now turn to the implications of formal instruction for the CING in reference to my fourth research hypothesis (*The explicit and formal teaching of language structures supports language acquisition with the CING*). “The term ‘formal instruction’ has been understood to refer to grammar teaching” and can be distinguished into formal instruction directed either at cognitive learner goals “where the focus is on developing linguistic or communicative competence” or at metacognitive goals “where the focus is on the use of effective learning strategies” (Ellis, 1994, p. 611).

The focus on developing linguistic or communicative competence is the most relevant type of formal instruction in the CING context, as the program provides “language-centered” instruction (Ellis, 1994, p. 611). This begins with the learner receiving formal instruction in a selected aspect of the target language (TL) which feeds into the learners cognitive learning goals (e.g. to learn to use the Simple Past correctly (see Figure 18) steps (in gray).

Figure 18: Types of formal instruction (adapted from Ellis 1994:612) [Language-centered, e.g., grammar]
Effects of formal instruction

CING instruction focuses on isolated aspects of English grammar (which learners select while working with the tool) and does not aim at the development of learners’ general language proficiency. The instruction takes place via the instructional information included in the tool’s material and the learners’ completion of the exercises on grammaticality and rule comprehension. These exercises were designed to help learners practice the application of structures in controlled and planned language production scenarios outside of spontaneous communication. This allows learners to produce without pressure and simultaneously monitor (via feedback) and improve their accuracy of the production of the structure.

Whatever knowledge the learner improves with this language practice cannot automatically be equated with acquisition. Researchers caution that earlier studies on the acquisition of grammar structures through instruction do not demonstrate acquisition per se. E.g., Lightbown et al. (1980) found considerable improvement in their instructed group’s performance in grammaticality tasks on morphological structures, but also note that the learners might not have fully acquired the forms to the point where they can use them correctly in spontaneous speech production (see Ellis, 1994). This suggestion is supported by Kadia (1988), as well as Ellis (1984 and 1992), whose studies measured learners’ acquisition by analyzing “relatively unplanned language use” (Ellis, 1994, p. 620), and Schuman (1978), whose subjects improved only in an imitation test, but not in spontaneous language production.

In contrast, support for the effect of instruction on unplanned language was presented by Pica (1983, 1985), who found that learners’ application of less complex structures (e.g., singular –s, copula –s) improved in unplanned language following formal instruction. More support for the positive effect of instruction on unplanned language can be found in Harley (1989) as well as in White, Spada, Lightbown, and Ranta (1991). Problems with acquisition through instruction can be seen in the overproduction of instructed structures (Lightbown, 1983; Pica, 1983; Eubank, 1987; Weinert, 1987; VanPatten, 1990; Ellis, 1994), the restriction of learners’ language usage to those structures that have been instructed (Felix & Weigl, 1991), and the short-term effects instruction has if it is “divorced from the communicative needs and activities of the student” (Lightbown, 1992, p. 194), or is intensive but of short duration (Lightbown, 1983).

We can conclude from this research that formal instruction in general can be considered to have an effect on learners’ acquisition of language structures which the learner
is ready to acquire (Pienemann, 1985) and that do not “involve complex processing operations” (Ellis, 1994, p. 623). If the instruction the learner receives indirectly in the CING, can also be beneficial to language learning we need to investigate. The benefit of formal instruction and all it might entail for learning with the CING can only be determined by considering the different types of its’ material presentation (inductive/deductive) and their potential impact on learners’ self-instruction.

**Explicit or implicit formal instruction**

The CING contains two types of material presentation for learners to use: inductive on its *Discovery* pages and deductive on the *Explanation* pages. The deductive material pages contain rule explanations accompanied by language examples, as well as comprehension check exercises directly related to the rules. The inductive pages contain selected sets of examples reflecting a particular rule/language structure instead of explicit grammar rules, as well as comprehension check exercises on the application of the rule in language production.

Generally, “explicit instruction includes all types of instruction in which rules are explained to learners, or when learners are directed to find rules by attending to forms,” while “implicit instruction makes no overt reference to rules or forms” (Doughty, 2003, p. 265). DeKeyser (2003, p. 321) gives a more precise definition, writing that “an instructional treatment is explicit if rule explanation forms part of the instruction, or if learners are asked to attend to particular forms.” Ellis (1994, p. 642) adds that learners in an explicit instruction setting “practice using” the rule. DeKeyser explains that explicit instruction can contain deductive information presentation in the form of rules as well as inductive information presentation in the form of tasks where learners need to “attend to particular forms and try to find the rules themselves” (2003, p. 321).

The CING *Explanation* pages reflect the deductive type of instruction in that they require learners to follow the rule when proceeding through the language examples in order to learn about the correct usage of the structure. Learners thus move from the rule to the examples. The rule material is often supported by additional rule information, highlighting, or comprehension-check exercises thus explicitly instructing the learner by guiding his attention to “particular forms” in the structure (DeKeyser, 2003, p. 321). The learner then has the option of practicing the structure on the *Exercise* pages.
The *Discovery* pages, on the other hand, take the approach of inductive material presentation, in that they present visually enhanced sets of examples that reflect a particular language structure and its rules. The users are then required to “induce rules from examples given to them,” which Ellis calls “implicit treatment” (i.e., instruction) (1994, p. 642). In Norris and Ortega’s (2000) survey of SLA research, they identify implicit instruction as having “neither rule presentation nor directions to attend to particular forms” as “part of the instruction” (Norris & Ortega, 2000, p. 437). The CING *Discovery* pages fit this description, as they only indirectly (via color coding in the examples) direct the reader to particular forms and exclude rule presentation.

The present study does not assess in what ways learners attend to structures and learn from the different types of grammar presentation. In fact, DeKeyser states that “no perfect test or procedure exists for distinguishing the results of implicit and explicit insight” (2003, p.320). Nevertheless, he claims that implicit learning (from implicit instruction) is at its best when involving “concrete and continuous elements.” He also states that research on attention in learning shows that “there is a positive role for some kind of attention to form” by means of explicit instruction, error correction, or the more indirect means of input enhancement (DeKeyser, 2003, p. 321), which brings us to the next set of terms relevant to this discussion.

*Focus on Form / Focus on Forms*

Focus on form instruction “entails a focus on formal elements of language” (Doughty & Williams, 1998, p. 4). It “overtly draws students’ attention to linguistic elements as they arise incidentally in lessons where the overriding focus is on meaning or communication” and simultaneously alternates “in some principled way between a focus on meaning and a focus on form” (Long, 1991, pp. 45-6). It thus fulfills a “need for meaning-focused activity into which an attention to form is embedded” (Gass & Selinker, 2008, p. 380). This attention is brought about by “occasional shifts in attention to linguistic code features, by the teacher and/or one or more students during classroom interaction which have been triggered by perceived learner problems with comprehension or production” (Long and Robinson, 1998, p.23).

The main organizing principle of the focus on forms approach, on the other hand, is “the accumulation of individual language items” (Gass & Selinker, 2008, p. 380) in the language examples. Focus on forms instruction “seeks to isolate linguistic forms in order to
teach and test them one at a time,” usually in a structured syllabus (Ellis, 1994, p. 639). Whereas focus on form concentrates on the formal elements of language alongside meaningful tasks, focus on forms is limited to this focus. It does not require that the meaning and use are already evident to the learner when “attention is drawn to the linguistic apparatus needed to get the meaning across” (Doughty & Williams, 1998, p. 4). As such it is more relevant to the learning situation with the CING but it remains unanswered which type of instruction is more successful? Research seems to indicate that focus on forms, with its explicit presentation of rules supported by examples is more beneficial to acquisition (N. Ellis, 1990).

Another aspect influencing the success of instruction is the potential lack of success of instruction. Ellis (1994, 1997) points out that formal instruction brings particular features to the learners’ attention, but that learners do not necessarily use this feature in their output. The learner might have noticed the structure and processed it further in his grammar system, but cannot apply it yet.

*Formal instruction in the CING*

The CING provides explicit instruction that also directs users’ attention to particular structures or rules in its content. Since even the inductive material pages contain instructions for the learners’ work in the selected language examples, they cannot be considered examples of implicit instruction. I consider them to be a weaker form of explicit instruction, while they can also function as aids for inductive learning.

Since the CING provides example sets that isolate a linguistic form and focus mainly on the formal elements of language, it can be categorized as focus on forms instruction. While the CING content pages also make information on the meaning of grammar structures available, they are designed to prioritize the correct application of structures, rather than allocating structures to different meanings of language.
This discussion has shown that the kind of instruction the CING provides can be advantageous to learners. The next step is to confirm this with the help of the fourth research hypothesis. The study also explores learners’ experience with the grammar material in order to determine the potential problems or advantages of its explicit and focus-on-forms instruction.

3.2.3.2 Interface Hypothesis

The knowledge that is a result of formal instruction can be either explicit or implicit, and is then accessed by the learner for an application in language output. Explicit knowledge has to date received more attention in SLA research, since it appears to support the generation of implicit knowledge in the learner (DeKeyser, 1997).22 Thus Ellis’ weak interface hypothesis (1993) posits that explicit knowledge considerably supports language learning and acquisition, in that it helps learners notice differences between their own language knowledge and (correct) production in the native speaker language. This process has been termed “noticing” or “noticing the gap” (Schmidt, 1994). Ellis writes that “explicit knowledge of a grammatical structure makes it more likely learners will attend to the structure in the input and carry out the cognitive comparisons between what they observe in the input and their own output” (Ellis, 2005).

This control of language output and the results of learners’ ongoing observations grow in the process of performing in the language, what we call practice (Sharwood Smith, 1981; Ellis, 1990). Thus the interface hypothesis argues for instruction that facilitates acquisition “by supplying the learner with conscious rules and by providing practice to enable them to convert this conscious ‘controlled’ knowledge into ‘automatic’ knowledge” (Ellis, 1994, p.654). This kind of instruction also integrates consciousness-raising tasks requiring learners to derive their own explicit grammar rules from data given them (see Ellis, 2005) including explicit feedback.23

The explicit instruction given on the CING Explanation pages can provide learners with the information they need to produce the language structures outside the CING in communication. Feedback on learners’ exercise performance can do the same. The learned

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22 Krashen, notably, disagrees, claiming that explicit knowledge cannot be turned into implicit knowledge (see Krashen, 1981, 1985).

23 “Whereas practice is aimed at developing implicit knowledge of the rule, consciousness-raising is directed only at explicit knowledge (i.e., there is no expectancy that learners will be able to use the rule in communicative output” (Ellis, 1994, p. 643).
knowledge (with the CING) could then function as reference to learners’ production processes. Alternatively, the CING Discovery Pages contain language material for learners to utilize in consciousness-raising tasks. By this means they can establish explicit rules on basis of the authentic and visually enhanced language data on the Discovery pages or even via the (non-enhanced) language corpus data. Although only in self-instruction, the CING can provide learners with the explicit knowledge and exercises necessary for their noticing of grammar structures that in the end become automatically produced language in the learners’ language output.

The interface hypothesis does have a weakness, however. Ellis, for example, notes that it does not “give recognition to the difficulty of altering developmental sequences” in learning and argues that “learners do not ‘acquire’ structures they are not ready for” (Ellis, 1994, p.621). This can also be applied to the CING and leads us to the teachability hypothesis.

3.2.3.3 Teachability Hypothesis

In the above discussion on the relevance and role of input in SLA, I cited the claim that salience of input, regardless of its type (frequency of the structure or teachers’ input manipulation towards salience) supports SLA (Hatch & Wagner-Gough, 1975, Lightbown & Spada, 1990). It follows that not all input is necessarily supportive of second language learning. While instruction in general segments repeats and rephrases input forms (Pica, 1994) in order to make learners (explicitly) aware of a structure without an explicit (rule provision) or implicit (language input/example) approach, all these efforts are of little use if the learners’ stage of language knowledge development is not advanced enough to comprehend the input forms.

Pienemann describes this level of development as the state of the learner’s language processor that is able (or unable) to manage the linguistic forms provided that subsequently leads to comprehension and correct production or the opposite (incomprehension and incorrect production) (see Pienemann, 2004). According to Pienemann’s teachability hypothesis, “instruction will only succeed in teaching a learner a new developmental structure if the learner is ready to acquire it” (Pienemann, 1985, p. 37). This is the case “if the learner’s inter-language is close to the point when this structure is acquired in the natural setting” (Pienemann, 1984, p. 201).
Information on the natural acquisition sequences, and thus on learner’s available knowledge on particular structures that would enable teachability, is still too limited to establish the ways in which the developmental stages of language knowledge are related to teaching (Ellis, 1994). Still, one can assume that a learner who has already independently produced a relevant linguistic form correctly has “signaled arrival at a stage” of readiness (Sharwood Smith, 1994, p. 117), even if this production has been rare. The subjects in the CING study have had at least five years of English instruction and have all received their German university entrance certificate (Abitur) which required them to pass the subject of English. This indicates that the linguistic structures of the simple past and present perfect are not new to these learners and that they will have passed the stage of mere “readiness” when they took their high-school leaving exams. At this level in school the correct application of the simple past and present perfect is required by all students.

Thus learners in my study will have produced the structures correctly in the past (even if in planned language output). The study’s test items were also designed to distinguish sufficiently between weak and strong learners. Furthermore, learner knowledge of these linguistic forms is likely to be explicit and able to support learners noticing these rules in input (c.f. Ellis, 1994). This helps them widen their knowledge of the rule through the different applications of it in the authentic examples or the rule information which adds to their existing knowledge.

Even if learners’ knowledge level is not this advanced, which we cannot establish outside of the study’s grammar tests, I follow Ellis (1994), who writes: “Adults are capable of comprehending form-meaning distinctions which they cannot yet produce and [...] instruction can help them to achieve this” (Ellis, 1994, p. 633). In this study we expect learners with lower levels of grammar knowledge to understand the CING grammar material and to learn from it.

**Preliminary Summary**

I have argued for the need to investigate the usability of the CING regarding its salience to the learners and their content material comprehension, as well as to assess potential learning improvement after self-instructing with the CING. Learners’ knowledge level of English at the outset must be taken into account, as it can affect learning performance if it is too low for the acquisition of the test topic at hand.
Although first-year students at a German university should be advanced enough in their English language knowledge to be able to learn the selected grammar structures, their language level should be quantified in a grading system. Therefore a questionnaire item was included in the study to establish learners’ English language knowledge by means of their last known result in English.

3.3 A theoretical approach to learning with hypertext

Technology in the form of computer-based educational resources has been on the rise in schools, private educational institutions, and universities for the last 20 years. Hypertext is applied in many different areas (e.g. Journalism, Sales,) and owes its popularity to the ability to present complex topic areas directly and comprehensively. Hypertext structures, like that of the CING, promise to be advantageous for learners’ knowledge acquisition (e.g., Spiro & Jehng, 1990; McKnight, Dillon, & Richardson, 1991; Whalley, 1993; Gerdes, 1997; Tergan, 2002). Previous studies of CING usability with students from the University of Chemnitz comparable to the subject group, however, found that its hypertext structure posed problems for some users (Heller, 2004a) (hypothesis 7).

Hypertext systems enable authors to present information on a content area in a networked form with the help of information nodes and links. Its use is often self-guided and influenced by individual interests and [learning] goals and can be considered advanced learning (Spiro, Feltovich, Jacobson, & Coulson, 1991; Jacobson & Spiro, 1994). This form of self-guided usage of networked information presentation, which the CING requires, is likely to have an impact on learners’ application of the program in their learning and will be discussed in more detail in the “Theories of autonomous learning” section, below.

3.3.1 Hypertext

The basic concept of hypertext, from its earliest discussions (Bush, 1945) onwards, has been to divide a content area into its individual information units and present it by means of interrelating nodes and linkages between the units, electronically in a networked format (see Tergan et al., 2000; Tergan & Lechner, 2000; Jacobs, 2004). The presentation can take the form of a branched or dynamic information display. This complex structure of information
enables users to place information in individual contexts as they establish (comprehension) links between the different units they access on their own (see Kuhlen, 1991; Krems, 1999). Networked structures were originally designed as a form of information presentation and (easy) information access for complex domains (Conklin, 1987; Kuhlen, 1991) before they were further developed for educational purposes (Whalley, 1993).

According to Nielsen (1994), the simplest distinction between traditional text and HT is the type of sequence. While traditional text is sequential, i.e., linear with “a single linear sequence” that defines “the order in which the text is to be read” (Nielsen, 1994, p. 1), hypertext is non-sequential, i.e., non-linear (Gerdes, 1997; Tergan, 2000; Tergan & Lechner, 2000; Jacobs, 2004), as “there is no single order that determines the sequence in which the text is to be read” (Nielsen, 1994, p. 1).

The material in a hypertext is represented by the hypertext’s nodes or links (see e.g., Figure 8), which are the units of information the hypertext can hold, for instance, in a content page (Nielsen, 1994) (e.g., the CING content page Use of Perfect). These nodes are connected to other nodes in the HT through “pointers” (Nielsen, 1994) or “links” (Kuhlen, 1991; Rouet, Levonen, Dillon & Spiro, 1996; Tergan, 1997; Tergan & Lechner, 2000), which are not fixed in advance but rely on the content of each node (see McAleese, 1990). This means that a node can contain one or several links depending on its content’s relevance or interrelation to other nodes in the HT (Nielsen, 1994) (Figure 19).

![Figure 19: “Simplified view of a small hypertext structure” (Nielsen, 1994, p. 1)]

Movement along these links and nodes in the network of a hypertext “is often referred to as browsing or navigating” (Nielsen, 1994). It is called “backtracking” if users move back
to previously visited pages. This form of navigation is supported by most hypertext systems (Nielsen, 1994, p. 3) and takes the form of browsers that help navigate the largest hypertext available, the World Wide Web (WWW) (e.g., MS Internet Explorer, Mozilla Firefox, Opera). This non-sequential structure means that there is not one but several ways to read the information included in a hypertext, and the “individual reader determines which [nodes] to follow at the time of reading the text” (Nielsen, 1994, p. 2) and what information to access.

### 3.3.2 Types of hypertextual structures

Given their representation of “different levels of abstraction, specificity, and significance of the contents of a subject area” (my translation; Tergan, 2002, p. 102), there are different types of hypertext structures available to authors (Gerdes, 1997). Contemporary hypertexts, for example, have a rather modular information structure where paragraphs are coherently interrelated by external links (e.g., the CING navigation bar) or links are integrated into the text, such as “clickable” words containing links to background or other related information. As Figure 20 shows, the basic types of hypertext structure (node-link/unstructured and structured hypertext) are often distinguished with regard to their representation of structure (Gerdes, 1997).

Figure 20: Basic classification of hypertext structures (Gerdes, 1997, p. 26) into node-link hypertexts and structured hypertext.
In unstructured hypertexts, also called *Knoten-Link-Hypertexte* [node-link hypertexts] (Gerdes, 1997), all nodes are interconnected (Jonassen & Grabinger, 1990) and the connections are based on “associative relations,” that is, not on hierarchical or equivalent relations (Kuhlen, 1991, p. 104). Gerdes (1997) even goes so far as to say that nodes in an unstructured hypertext are related on the grounds of “somehow” existing connections between each other that lack any explanation (Gerdes, 1997, p. 21).

Structured hypertexts, on the other hand, are organized in a linear, hierarchical, or networked fashion and rely, for their top structure, on semantic or pragmatic principles of connection (Kuhlen, 1991; Tergan, 1997; see also Jonassen, 1986), or on a topical hierarchy (Jacobs, 2004) based on the content area they present (see Figure 20). Farkas and Farkas (2002, p. 327) term the hierarchical hypertext structure “multi-path structure,” similar to Storrer’s (2000) category of “multi-sequential” (*multi-sequentieller*) hypertext.

While some fields (such as psychology, see Lawless & Kulikowich, 1998) are too complex in their structure for easy presentation and learning in HT, English grammar makes for a more finite and hierarchical content structure and seems appropriate for a presentation in hypertext, as is demonstrated by the CING.
In the CING, the major content areas of English grammar (e.g., the verb phrase or tense and aspect) and their subtopics (e.g., present tenses or simple present) are further divided into sub-subtopics (e.g. since + present perfect). While book grammars impose a linear structure on the complex system of English grammar, the CING was designed to represent the structure of English grammar content in a way that would help learners to comprehend it as a system where information has more than relevance to previous and following information but is interconnected with other information. The program was meant to alleviate confusion about topic allocation by presenting the relevant topics of a grammar topic easily accessible in the index or on the topic page itself (see Figure 23). This is to help learners understand the existing relations between grammar topics in a way that a book grammar cannot.

*The CING hypertext*

As the excerpt of the CING Sitemap (Figure 17) shows, the tool contains a structured hypertext and reflects in its content structure the semantic and pragmatic principles of content organization (Tergan, 2002) on which English grammar is built.

The hierarchy of the CING content begins with the main area topic title Tense/Aspect, which is followed by the content area titles (e.g., Continuous Forms, Perfect Forms), the second level of links (e.g., Continuous Basics, Preliminaries), and finally by the content pages (e.g., Simple vs. Continuous, Simple Past, Use of Perfect). While in Gerdes’ model of a hierarchical hypertext structure the different levels are already filled with information nodes, the CING’s levels are merely links, except for the bottom level (e.g., Use of Perfect) which contains the information pages with grammar information and exercise units. Although they lack content, these links represent vital steps on the way to more specific titles (e.g., Tense/Aspect -> Perfect Forms -> Present -> Present Perfect 1) in the content structure. Without understanding and following them correctly, learners might not reach the grammar content they actually require.
In addition to the Sitemap and its links to the program’s content structure, each content page is presented inside a frame surrounded by links that indicate the page’s location in the content structure (Figure 22, circled parts). These links connect each content page to others in the tool and can be distinguished into thematic links that identify the topic of the target page (e.g., Present Perfect 1), functional links naming the function of the target page (e.g., Bookmarks), or navigational links naming the navigational goal (e.g., Home) or the navigational direction (e.g., Back and Forward) (see Jacobs, 2004, p. 245). Most of the links in the CING are thematic links and name the topics of the target pages and the topic areas (e.g., Tense/Aspect, Perfect Forms).
The color strips directly above the content page contain links to Tense/Aspect, Perfect Forms, Present and Use of Perfect, Present Perfect 1 and Present Perfect 2, and as such interrelate the content pages to the content levels above them. The connection between the different types of content is established by the links under Top Links that relate the currently displayed content type (here Explanation) to the other presentation types (here Discovery and Exercises) of the same topic (Use of Perfect). If learners are selecting links without these aids in the hypertextual content the visited content may appear unstructured (c.f. Gerdes, 1997) which means that, despite the CING’s content link organization and hierarchical structure (see Figure 17), a learner might move outside them and the sequence of visited content might become unstructured.

Within any given navigational path, the Back and Forward buttons in the top frame offer “one-step navigation” to previously visited pages. Other content pages can be reached via the Sitemap link, the Content Menu, or previously established content links (bookmarks) via the View Bookmarks link. The History link provides a drop-down menu of the pages already visited during the current visit.

Overall, the CING presents what Tergan (2002, p. 103) calls a mixed or “hybrid” organizational structure of hypertext, allowing users to freely explore the hypertext content as well as guiding them by a hierarchical structure.

### 3.3.3 Hypertext usage in learning

In contrast to linear text, hypertext is considered to provide rapid access to information (Whalley, 1993), which can help learners reduce the cognitive costs (c.f. Rouet and Levonen, 1996) involved in searching for information in a book (e.g., by turning the pages). Language learning material is often distinguished into reference books and textbooks, and most hypermedia programs function more as a reference than a learning or teaching tool. Only if they contain underlying didactic structures and aims, such as the CING’s combination of Discovery, Explanation, and Exercise materials (see chapters 2 and 3 [“Theoretical aspects of second language acquisition”]), can they be considered instructional programs (see Kleinschroth, 1993).

Hypertexts entail a system of information units and links, which provides a complex interrelated system of content in contrast to the linear presentation in a book. This makes flexible access to any required information unit possible by following random sequences
(Tergan, 1997) within the hypertext information structure. It also enables the development of
a kind of learning that is “concerned with linking, relating, structuring, restructuring, adding,
collecting and adapting,” so that existing knowledge can be modified and new knowledge
acquired via an active and explorative process of knowledge seeking (see McAleese, 1989,
p.19). In this process, “one bit of information [can] trigger an association with another bit of
information” (McAleese, 1989, p. 6), and readers will be able to decide independently which
information to access and what sequence to follow, thereby creating “multiple texts” (of
information) for the same topic via various exploration paths they took in the hypertext
material (Spiro & Jehng, 1990, p. 160). Hypertext also supports different learner goals and
strategies with the possibility of varying topical prioritization (Tergan & Zimmer, 1992).
Every learning task enables the learner to explore different material and paths in the
hypertext, which is thus often associated with a more explorative approach to learning
(McAleese, 1989).

Many researchers have emphasized this potential of a hypertext to support self-guided
and problem-oriented learning (Tergan, 1997) through the constructive processing of its
material. Successful learning, however, only comes under certain conditions of high-level
self-regulatory competence, learners’ well-defined goals, and explicit scaffolding support
(Rouet, 1992; Jonassen, 1993; Jacobsen et al., 1995). Thus hypertext usage for learning is not
successful per se, and there are challenges to be overcome before hypertext can lead to an
improved learning situation. Learners’ goals play a crucial role here.

**Hypertext usage based on learning goals**

Kuhlen (1991) established four types of browsing within a hypertext according to a specific
learning goal.

- “Specific browsing” (Batley, 1989) (i.e., gerichtetes Browsen [Kuhlen, 1991] and
gerichtetes Browsen mit Mitnahmeeffekt [“specific browsing with spillover effect”]),
where users aim to find particular information and browse the hypertext for this
information while also processing all other relevant information encountered as
Gerdes (1997, p. 31) terms it;

- “Specific browsing” with serendipity effect (i.e., gerichtetes Browsen mit
Serendipity-Effect [see also Kuhlen, 1991 and Gerdes, 1997], where users search for
particular information, but do not establish restrictions on what they find, so that their
focus shifts “serendipitously” from their original aim to other attractive information that might not be entirely relevant to the goal they started out with (see McAleese, 1989, p. 7);

- “Unfocused browsing,” where learners start out without a specific learning goal, although they might be aware that they need certain information to solve a problem. This information however is not specifically defined (Kuhlen, 1991, p. 129) and the search is unplanned and unfocused (Gerdes, 1997);

- “Associative browsing,” where the learner has no goal and is guided completely by the attractiveness of the information on offer (Kuhlen, 1991; Tergan, 1997, p. 127) until losing interest in the material. In associative browsing, the navigation path back to the beginning is almost impossible to retrace and disorientation is a likely result (Gerdes, 1997).

“Unfocused” and “associative browsing” have been related to hypertext systems where learners have full control and run the risk of rambling “at random through the hypertext, with choices motivated by moment-to-moment aspects of the display that happen to attract attention” (c.f. Hammond, 1993, p. 55).

**Hypertext usage based on hypertext content**

Other researchers have focused on how users navigate with regard to the hypertext content rather than the learning goal. Lawless and Kulikowich (1998, p. 51) summarize the findings as follows: “Literature investigating hypertext navigation has identified three navigational profiles of readers: a) knowledge seekers (‘characterized by the number of times they visited information-based cards’), b) feature seekers (‘spent a great deal of time exploring the terrain of the hypertext and seemed extremely intrigued by the special features and resources afforded by the computerized environment’) and c) apathetic hypertext users (‘spent little time in the hypertext, showing no apparent nonlinear trends in their navigational choices’) (Lawless & Kulikowich, 1998, p. 66).

Overall, these classifications of navigation types cannot be directly related to the actual learning of particular information (Gerdes, 1997, p. 38). My aim was to explore the learning outcomes with the CING without necessarily relating them directly to particular
navigation behavior. Nevertheless, in order to understand which behavior in the tool and which aspects of the tool might hinder learning and, likewise, to understand overall tool experience, I include a general investigation of learners’ CING movements (via log files). My study also considers the question as to whether the “minimum of guidance” the CING provides is ideal “for helping learners ask themselves the right questions” (Lawless & Kulikowich, 1998).

The above categorizations show that learning goals and interest focus (e.g. on information or features) are decisive factors in learners’ behavior in HT. The absence of a learning goal or interest focus can possibly lead to disorientation in the hypertext structure (see Gerdes, 1997). Conklin (1987) termed this disorientation in a hypertext lost in hyperspace (see also Kuhlen, 1991) and it has been closely associated with cognitive overload (Gerdes, 1997). In this context, cognitive overload refers to the excessive demand a hypertext can place on learners while it requires them to search, select, and work with information almost simultaneously, and it can increase with disorientation in the hypertext structure.

### 3.3.4 Challenges of learning with hypertext

**Cognitive Plausibility Hypothesis**

In the early days of applying hypertext in learning, different theories argued for the advantages of hypertext with regard to traditional texts (Gerdes, 1997). These were based on the core assumption that the mind “operates by association” and that the association of thoughts links one item (of information in the hypertext) to the next one (c.f. Bush, 1945, p. 106) while proceeding through the content while, e.g., reading for a learning goal (see Gerdes, 1997).

For Jonassen (1991), a hypertext’s networked display structure of ideas/knowledge is its main advantage:

_Hypertext structures can reflect the semantic network of an expert and map the expert’s schemata onto the novice’s schema. [...] Hypertext also manifests principles of cognitive psychology. Furthermore, the network of ideas comprised in a hypertext system can mimic semantic networks of associated ideas possessed by the author or user_ (adapted from Gerdes, 1997, p. 56; [translated by the author], see also Jonassen 1998, 1990).
The complex structure of the hypertext material and its free availability of access paths were thought to be sufficient to aid learners’ acquisition of information, as the network-like representation of information was seen to be more easily integrated into the learners’ existing knowledge system than linear presentation forms. Furthermore, hypertext supports associative browsing through the hypertext content structure, which was held to correspond to the structure of human knowledge and the basic principles of the functioning of the human mind (see Bush, 1945; Jonassen, 1986, 1990). Researchers assumed that “by traversing the links within the hypertext” (serendipitous navigation), “a user will acquire the content and the form of the database” (Cunningham, Duffy & Knuth, 1993, p. 38).

The notion of the cognitive plausibility of a hypertext was based on the alleged similarity of the structure and function of knowledge processing and representation. Researchers believed that information elements and existing interrelations could be transferred to the user’s own knowledge system regardless of the user’s actions with the material (see Lehtinen, Vauras, Salonen, Olkinuora, & Kinnunen, 1995).

In the end, empirical findings failed to entirely support this assumption (Tergan, 2002). McNight, Dillon, and Richardson (1990) found higher comprehension and retention results for main ideas and facts through the study of a linear text than that of a hypertext; Dee-Lukas and Larking (1992) showed in their empirical study that learners’ active and constructive involvement in information processing is necessary for satisfying the cognitive requirements of learning with a hypertext (c.f. Tergan, 1997). These findings suggest that structural complexity and individualized access to information material are not sufficient to pose an advantage for learning. Learners’ active involvement is one significant factor that can overcome the potential hindrances to learning with hypertext materials, that is, cognitive overload and lost in hyperspace.
Cognitive Overload

Learners’ active involvement can indicate that they have well-defined learning goals as well as the ability to self-regulate their activity in the system. Goals and self-regulation help protect learners from information overkill (cognitive overload) caused by the availability of numerous information paths they have to choose from, various text items that have to be comprehended, and the constant pressure to make the correct decision in information selection and navigation (Conklin, 1987). Once learners have come across information they want to pick up later (e.g., due to its marginal importance), memory resources will be invested to store this information. Even if it is only a matter of short-term storage, this leaves less memory capacity for the original learning task (Gerdes, 2001; Schnotz, Seufert and Bannert, 2001; Niegemann et al., 2004).

Research often distinguishes between the cognitive load that is a result of the complexity and difficulty of the learning material (intrinsic cognitive load) and extraneous cognitive load, which is due to the structure of the hypertext that requires learners to complete many processes unrelated to their goal to find relevant material (c.f. Niegemann et al., 2004). This extraneous load also comes to bear when many graphs and interlinks are included and the hypertext surface lacks a clear indication of the relevance of this content to particular learning tasks.

Learners’ operationalization of the hypertext, its paths, navigational tools, and other content for their own learning all have an impact on their “cognitive overhead,” as these activities extend beyond mere information retrieval and learning activity. Blumstengel (1998) argues that goal orientation is important for the utilization of hypertext while it is not necessarily conducive to learning, especially if users do not integrate their goals into their learning.

Once cognitively overloaded, learners are likely to leave learning tasks incomplete and to lose motivation for learning with the material that hinders their information search. This can lead to learners rejecting hypertext as a source of information for learning. I address possible solutions to these issues in relation to the CING below.
Lost in Hyperspace

An important dimension of learners’ cognitive overload while learning with HT is disorientation within the structure: “lost in hyperspace” (Conklin, 1987), “lost in space” (McAleese 1989; p. ix), or “lost in cyberspace” (Schmied & Haase, 2003). Some researchers consider this phenomenon to be one of the most serious issues in the use of hypertexts for learning (MacDonald & Stevenson, 1998; Eveland & Dunwoody, 2000).

Once learners have lost their focus on the topic in the complex and interrelated material of a hypertext and fail to find information items relevant to the learning goal, they are likely to spend more and more time on navigating and deciphering the hypertext structure in order to find their way (back) to learning-relevant nodes (Gerdes, 1997). The information retrieval from these nodes can, as a result, be seriously impaired or not take place at all. The learning task cannot be fulfilled and learning partly or completely fails.

Gerdes (1997) provides a summary of issues other researchers have related to the concept of lost in hyperspace (Conklin, 1987; Kuhlen, 1991). When they are lost in this way, learners do not know:

- their position in the hypertext in relation to other information
- how to get to particular information in the hypertext they assume to be included there
- how to find the best starting point in the hypertext
- how to get to a point in the hypertext that they have already visited
- the optimal way through the hypertext for the learning task at hand
- if all relevant information has been accessed at the end of a hypertext session
- the extent of the hypertext and what information it includes
- what they can do from their current position (in the hypertext) and where they can go from there

While these issues can also apply to traditional texts that are badly structured or lack sufficient indexing (see Gerdes, 1997), using a book will hardly present learners with the problem of not knowing how to return to a piece of information they recently read. Merely turning the pages and consulting the index would suffice. Traditional texts thus offer a form of information structure and presentation that users can utilize with little training or support. Cognitive overload, or extraneous cognitive overload, as Niegemann et al. (2004) call it,
results from the numerous options for information access in the interrelated information body of a hypertext which might in itself be unfamiliar to learners. Appropriate compensation strategies are crucial for a successful construction or application of learning hypertexts.

### 3.3.5 Learning support with hypertext

Learners need to be supported in their navigation through and orientation in the non-linear information organization of a hypertext in order to avoid any type of cognitive overload and disorientation (c.f. Bekavac, 1999). Effective support in a learning situation must take into account the “context of the material, needs, user ability and learning strategies” (Allison and Hammond, 1989, p. 62), as well as the learning task and environment, and cannot be provided ad hoc. This study represents such an attempt to investigate and measure learning with the CING and to assess the program in view of the findings and theories of other research that has been conducted on the area of hypertext (and autonomous) learning.

**Support for a hypertext tool**

Researchers have suggested various types of hypertext learning support ranging from “explicit scaffolding support” for appropriate content selection (Rouet, 1992; Jonassen, 1993; Jacobsen et al., 1995) and a detailed presentation of the network’s structure in the user interface to wizards that guide the learner step by step through the program (Jacobs, 2004).

Gerdes (1997) provides a general list of support items. In her view, guided tours combined with savable, learner-generated (and thus individual) dynamic paths (within the hypertext structure) and hypertrails (that structure sub-topics) aid hypertext usage. She also suggests providing filter mechanisms that present only particular links and nodes as well as a navigation history and bookmarks which can be saved and accessed in the tool at any time (c.f. Gerdes, 1997).

Research has found that such types of general navigational support potentially lead to “reduced navigational effort, less reading time with better results [in subsequent knowledge/skills tests] and increased use of relevant content pages” for the learning task (Brunstein, Naumann, & Krems, 2004, p. 3831; Naumann, Waniek, Brunstein, & Krems, 2003). Since a hypertext affords “the reader the opportunity to interact with the text” (Lawless & Kulikowitsch, 1998, p. 51) this interaction is certainly impaired if the network’s structure is
incomprehensible to the learner. Support can also enable learners to comprehend the information structure and network on their own terms and individually interact with the parts required for their learning task or information search goal.

**Support in the CING**

While the CING does not provide a guided tour through the tool, it offers learners a brief introduction to the different content types and overall aim of the CING on the *Introductory Page* (see Figure 5) where every learner arrives after logging into the tool. It also offers a *History* button that displays the entire navigation paths of the learner’s current CING use in the form of links (allowing the destinations to be easily revisited) and *Bookmarks* that the learner can individually set and view for current or future visits to the tool. The program does not provide hypertrails, options for savable dynamic paths, or filter mechanisms to focus the link presentation. These could potentially improve the tool’s usability.

**Hypertext support for learning and learners**

Some researchers advocate forms of support tailored specifically to the learner and the learning situation. It is generally believed that learners who are aware of their knowledge of a topic and their knowledge gaps are better equipped to decide “where they want to go” (McAleese, 1989, p. 20) during navigation and discovery in a hypertext.

Effective learning is often associated with orientation, goal specification, planning (of the learning activity or experience), information search, evaluation of information, and the monitoring of the learning process (including evaluation of learning progress and outcomes). These are termed metacognitive learning processes (see Schnitz, 1991; Bannert, 2003). Success in hypertext learning can be increased with specific support aimed at assisting these processes (Lin & Lehmann, 1999). Thus Brunstein and Krems (2005) discovered that learners who had been provided with search tasks and metacognitive learning strategies (e.g. defining a learning goal) were able to work through and reproduce learning material better than those without these strategies (Brunstein & Krems, 2005, p. 245).

The effectiveness of metacognitive support can be limited by learners’ knowledge levels. Bannert (2003) and others (Shin, Schallert & Savenye, 1994; Niegemann, Hofer, Gronki-Jost, & Neff, 2001), for instance, found that learners’ little pre-knowledge of a
learning topic led to a rare use of metacognitive learning strategy support, while learners with advanced levels of pre-knowledge found it to be a restriction on their learning (Konrad, 2001). One reason for this finding could be that advanced learners find the support over-demanding as they have existing learning strategies (see Heiß et al., 2003) which do not combine with the provided strategy support. Nevertheless, the implementation of learner-appropriate metacognitive strategy support could improve the CING. I return to this point in more detail in chapter 5.

3.3.5.2 Learner requirements for hypertext use

As noted above, hypertext use is only successful, if, alongside explicit scaffolding support, learners bring self-regulatory competence and well-defined goals to the hypertext learning situation (Rouet 1992; Jonassen 1993; Jacobsen et al., 1995). Thus another aim of my study was to establish what preexisting learner characteristics or strategies promote learning with a hypertext structure like the CING. I examined these potential mechanisms via observation (logs) and questionnaire data, and now turn to those areas that proved to be most applicable to the CING.

Hypertext designers conceive of users as “individuals who set their goals, select and structure contents, apply strategies for learning, and construct their knowledge autonomously” (Tergan, 1997, p. 268). In that learners are expected to take most of what is involved in learning into their own hands, this view on hypertext learning clearly resembles a “technology-oriented” constructivist position on learning (Jonassen, 1991; Duffy & Jonassen, 1992; Tergan, 1997, p. 268).

Learners must select their learning strategies, assess their personal learning needs, weaknesses, and strengths (in the respective topic), as well as know how to address them and monitor progress. Like distance learners, hypertext learners must be aware of their abilities in a subject area, as well as their attitudes towards and perceptions of it (Hurd, Beaven, & Ortega, 2001). Such active involvement in the learning process has proven to lead to superior learning outcomes (Veenman, 1993).
Learning Goals

Schnotz and Zink (1997, p. 95, translated by the author) found that “hypertexts seem to be better suited for learning when there is a specific goal that focuses processing on the information relevant to the task at hand”. When learners lacked learning goals, the researchers found linear texts to be better suited for learning (Schnotz & Zink, 1997, p. 95). They also found that a “clear aim” in the search for information and the ability to identify what content in the learning material was relevant to the particular goal are crucial requirements for successful hypertext learning (Schnotz & Zink, 1997, p. 95). Learners, however, often lack these characteristics (Rouet, Levenon, Dillon, & Spiro, 1996; Lawless & Brown, 1997; Brenstein & Schellhas, 1998).

Related to goal-orientation is also the ability to self-organize the learning experience while acting independently of pre-structured material areas to find information relevant to the learning goal (field independence) (Tergan, 1997).

Knowledge level of the learning topic

Another learner characteristic affecting hypertext learning is the level of knowledge about the learning topic (McDonald & Stevenson, 1998a, 1998b; Last, O’Donnell, & Kelly, 2001). This was found in studies with varying content structures (McDonald & Stevenson, 1998a) and navigation tools and support (McDonald & Stevenson, 1998b). Learners with little prior knowledge of the learning topic found working in the hypertext more disorienting than experts.

Lawless and Kulikowich’s study (1998) of strong and weak learners in the knowledge area of the learning task found that weaker learners moved and learned inefficiently in the hypertext due to frequent distraction by “special features of the computerized environment.” The authors refer to these learners as feature explorers. They also found that learners with a high level of knowledge in the subject area showed the least interest in the HT, which the researchers attribute to the irrelevance of the HT information to the learners’ knowledge development. This group was termed apathetic users. In contrast, learners with moderate levels of knowledge displayed the highest interest and use of HT information and were called knowledge seekers (see Lawless & Kulikowich, 1998, pp. 66-68). However, Spiro et al. (1991) find more efficient HT use (e.g., material selection, navigation) in advanced learners,
while in McAleese’s (1989) study, learners who were aware of their level of knowledge and gaps in it practiced a more controlled navigation in hypertext.

These findings indicate that experts in a particular knowledge area can outperform novice learners, but that the form and organization of the HT interface can cancel out this advantage (see Salmeron, Canas & Fajardo, 2005). This can mean that learners knowledge level is likely to have an impact on successful CING usage.

**Hypertext experience**

Efficient HT usage is also supported by learners’ experience with hypertext usage (learning). Wandtke and Hurtienne (1999) found that learners focus more on links in a hypertext. A result of this distraction is learners’ increased focus on the external information of the networked system rather than on the content. If the external information (i.e., links) does not match their existing knowledge relevant to the task they are to complete, they could be left confused and disoriented (Wandtke & Hurtienne, 1999, p. 52). Reed et al. (2000) found evidence of the positive impact previous HT experience can have on learners’ HT usage. In their study, learners’ previous experience with HT (as opposed to mere software applications, e.g. databases, word processing, etc.) had an impact on their HT browsing. Learners with HT experience used fewer steps in the HT, which were not following the CING’s linear material structure but still focused on the learning goal. Learners without previous HT experience required more steps that were also more linear, comparable to those used when reading a book.

**Preliminary Summary**

In summary, learners’ “individual cognitive competence and processing styles” as well as their “experience in making effective use of a system’s [e.g., HT system] facilities” (Rouet, 1992, p. 259) can impact the effectiveness of learners’ knowledge acquisition with a hypertext. Data on these issues was thus included in my study with the aim of assessing what role they play in learning with the CING.

While log files track learners’ movement through the CING as they prepare for a grammar test, my “demographic” questionnaire collects information on learners’ general knowledge of the subject matter they are focusing on in their use of the CING (English
grammar: simple past and present perfect) (questions 4, 5, 6a and b, 7b, see Appendix C2). This aspect also figures in the questionnaire supporting the guided interviews (questions A3a and b, A7a, A8, Appendix G1).

I also attempted to measure learners’ previous hypertext experience by posing a general question about the kinds of hypertext (e.g., blogs, e-cards, library catalogues such as Web-Opac, etc.) they frequently use on the Internet (question 10, see Appendix C2). Posing the question in a general way seemed appropriate after our preliminary studies found that only few subjects regularly used computers other than for e-mail and thus could not be expected to respond to a question involving varying types of hypertexts (e.g. online magazines). Although I expected the subjects to have had little prior contact with the CING, I included a question on their experience with the tool (questions 14a and b) in order to control for this variable in the study. I also addressed this aspect in the guided interviews in questions A1, A2, A6, and B1 (Appendix G1).

The CING hypertext demands not only learner skills in hypertext usage, but also their comprehension of its information nodes that enable navigation to particular content pages. The lack of such understanding can lead to navigation errors that could trigger disorientation or bring about failure in finding appropriate materials. This aspect of CING usage was addressed in a question on learners’ comprehension of the link titles included in the topic area of the learning task (question 13, see Appendix C2) and their ability to relate them to the correct subtopic area (e.g., simple past). I also included evaluation statements in one questionnaire that aim at revealing learners’ CING experience of different aspects (e.g., Feedback; see Appendix A7).

3.3.6 Investigating hypertextual learning in the CING

As I have shown, both learners and the HT design have to fulfill certain prerequisites in order to ensure the success of learning with a hypertext. Nielsen (1994), McAleese (2003), and others argue that good (goal-focused) orientation and navigation within a hypertext structure are crucial for its usability. Various researchers (e.g., Gerdes, 1997; Bekavac, 1999; Heiß, Eckhardt & Schnotz, 2003) have developed frameworks offering general or learner-specific systems of support for the application of HT in learning. These, however, do not include research means to understand why and in what way users have problems with navigation in the CING that was observed via log file data (e.g. on navigation steps and time spent on a
page) and investigated further via learner interviews. Finally, the results were related to the quality (successful or unsuccessful for the learning task) of the users’ hypertext navigation.

Schnotz and Zink’s (1997) model of *information specification* (IS) provided the best framework for my investigation, as it helps combine users’ behavioral steps in a HT with learner characteristics, (e.g., previous knowledge about the hypertext information), which can prove necessary for successful learning with hypertext.

**Information Specification (IS)**

In general, as established above, HT as such (not only a self-instruction tool like the CING) requires more independent learner decisions than do traditional texts (see Tergan, 1997, 2002; Gerdes, 1997). In a hypertext it is not mainly the author who establishes content coherence by information selection and sequencing, but the readers themselves, who decide which texts to read (Schnotz & Zink, 1997). Readers have to produce the coherence between information items and generate a knowledge structure (of the information absorbed) from the HT learning material that can integrate new information into future learning (see Schnotz & Zink, 1997, p.96). Schnotz and Zink (1997) outline the following set of activities that learners have to perform to successfully learn with hypertext:

- Adequate specification of the information goal (i.e., learning goal, task)
- Information search
- Assessment of found information
- Semantic processing of information

According to the authors, learners first have to clearly and appropriately specify (for themselves) the information required to complete the learning task at hand (adequate specification of the information goal). The more information goals learners follow and the less specified these goals are, the more likely it is that they will be unable to clearly distinguish goal-relevant information. On the other hand, where very few, but highly specified information goals exist, learners can have a hard time finding all the important information available because their own learning goal specification does not include all the information necessary for their learning task at hand.

Second, in the search for the learning material in the hypertext (information search), learners have to understand the network structure of the hypertext content they are navigating. This understanding must be topological, e.g., *How are the different information parts*
**Information Specification applied to CING behavior**

In order to distinguish and interpret the actions that subjects display during their CING activities, the above processes (except for semantic processing of information) must be related to observable learner behavior. To assess learners’ completion of the first step in the system, **adequate specification of the information goal**, I observed their use of pages. The set of pages visited can indicate learners’ level of specification during their information search in the CING. For example, vague specification would manifest in visiting pages only partially related to the learning topic, while focused specification would lead to visiting pages directly related to the learning task topic. A majority of irrelevant pages visited can hint at learners’ mis-assessment of the information goal (learning task/goal). I also included questions in the qualitative interviews (questions A7, A8, and B3a, see “Theories of autonomous learning” section) for a learner-focused and individual investigation of this step. My aim was to reveal the strategy of goal specification that learners use and on which they base their choice of pages.
The second step, *information search*, is related to learners’ understanding of the hypertext node structure, which I investigated by means of question 13 in the demographic questionnaire (see Appendix C2). Here learners were asked to relate a list of CING link titles to the learning task topics (simple past and present perfect). I also measured the time spent on navigation in the tool. Extensive navigation time could suggest learner disorientation within the HT structure and the failure to find task-relevant information pages. If this is related to the learners’ comprehension of the navigational link titles and page titles a correlation between a learner’s title knowledge and his navigation time will confirm this relation. The study also includes the frequency and duration of visits to the introductory page (see Appendix N), as this page can be used as a navigation aid if learners experience problems in their *information search*.

The third step in the framework, *assessment of found information*, entails the investigation of learners’ ability to assess the relevance of visited material to their learning task. The more irrelevant pages are involved in a learner’s CING visit, the less likely it is that the learner was capable of correctly assessing the relevance of the found information to the learning goal. This could also be an indication of learners’ lack of information (learning) goal specification (process 3). In addition to the number of visits, time spent on a page can also give an indication of whether learners correctly assess the relevance of the page to their learning goal. Navigation in an unfamiliar environment naturally leads to some goal-unspecific movement to pages one did not want to go to in the first place, but the recognition of their irrelevance to the learning (navigation) goal should quickly lead to a change of course to other, more relevant material. Thus, if learners stay on irrelevant pages for a longer period of time or visit relevant pages only briefly, this could indicate a possible impairment of their ability to assess the relevance of these pages for learning.

The model below (Figure 24) integrates learners’ actual CING actions and learner characteristics (e.g., knowledge of topic titles) into a system of processes involved in *information specification*. 
This model allows for a rigorous examination of the subjects’ performance as it relates learners’ actions to their learning processes and thus reveals the possible shortcomings of the tool for learners.

It must be noted that this model does not include a learning task, as this aspect was varied by Schnottz and Zink among the subject groups they studied. In my study, the learning task was provided to the learners in advance. Nevertheless, they were always required to develop individual learning goals for their work in the CING (related to their existing knowledge gaps and learning strategies).

**Preliminary Summary**

The above discussion of HT and learning clearly shows the need for learners’ active involvement in the learning process with a hypertext. This is particular relevant to the CING, a “self-instruction tool” for learning and studying English grammar. In the early days of HT,
many researchers expected hypertext structures to support “self-directed and problem-oriented learning” (translated by the author; Tergan, 1997, p. 241) merely on the basis of flexible and individualized information access. Subsequent research has shown that learner support might be required on a metacognitive level of learning (e.g., Schnitz, 1991; Bannert, 2003), as well as generally on the hypertext level (e.g., Gerdes, 1997), either in addition to self-regulated learning behavior or in order to trigger it.

Various aspects of learning have an effect on the usage of a hypertext, such as learners’ ability to set learning goals (even if usage is based on a given learning task), their subject knowledge, and their experience with hypertext learning (or usage) which can be enhanced by support measures in the HT (e.g., Gerdes, 1997). Although this study does not make concrete recommendations for the further development of the CING given the unlikelihood of their implementation, it does consider what requirements the tool and the user have to fulfill in order for learning to be successful.

The study subjects were expected to have had no experience with the CING, but an intermediate knowledge of English grammar, specifically of the simple past and the present perfect. The subjects did not have extensive experience with autonomous English language learning or complex hypertext-based learning tasks. The study assesses the difficulties resulting from this learner background (knowledge) and the minimal hypertext support the CING provides to learners along with the complete lack of metacognitive learning support. I also make suggestions based on Schnitz and Zink’s (1997) model of information specification. For instance, learners’ specification of a learning task is necessary for a successful learning experience with the CING. This skill, however, cannot simply be imposed on the learner by the CING or a learning task, but has to be autonomously integrated into the learning process by the learner or an instructor, if available.

### 3.4 Theories of autonomous learning

In regard to learning with hypertext materials, many researchers (see “Theories of learning with hypertext” section) have stressed the need for self-guided and problem-oriented learning (e.g., Tergan, 1997) that entails successful self-regulation and learning-goal orientation (Rouet, 1992; Jonassen, 1993; Jacobsen et al., 1995). If this is not given, learners tend to apply inadequate strategies and regulate their learning process insufficiently (Rouet, Levonen, Dillon, & Spiro, 1996; Lawless & Brown, 1997; Brenstein & Schellhas, 1998), while showing
minimal learning progress due to their inefficient use of the interactive web-based material (see McKnight, Dillon, & Richardson, 1993; Foltz, 1996; Unz, 2000). To investigate autonomous learning a definition of the same is required.

There are a variety of definitions of the concept of autonomous learning. Holec (1979), for instance, in his overview of autonomy in learning for the Council of Europe, describes an autonomous learner as “capable of determining objectives, defining contents and progressions, selecting methods and techniques to be used” as well as of “monitoring and evaluating what has been learned” (Holec, 1979, p. 3).

In general, definitions of autonomous learning usually include the following aspects (Pintrich, 2000, p. 452):

- learners are active participants in the learning process
- learners can potentially control, monitor, and regulate certain aspects of their own cognition, motivation, and behavior
- learners can monitor their progress towards standards/goals and regulate cognition and behavior for goal attainment

Two terms generally used in the context of autonomous learning are self-instructed learning (self-instruction) and self-regulated learning (self-regulation). The following outlines my definition of learners’ unguided learning behavior (i.e., without teacher involvement) in the CING.

**Autonomy, self-instruction, and self-regulation**

A decisive characteristic of autonomous learners is their acceptance of responsibility for their own learning (Holec, 1979, p. 3; Little, 1991; see also Dam, 1995) (hypothesis 8). This includes the setting of learning goals (also called task realization), selection of learning materials and learning activities, and autonomous self-assessment (Holec, 1979; Brookfield, 1986; Benson, 2001). Autonomous learners have to provide for themselves what in an instruction situation is provided by the teacher.

Successful autonomous learners are expected to have the capacity for “detachment, critical reflection, decision-making and independent action” (Little, 1991, p. 4). Self-instructed learners, on the other hand, are generally expected to learn by themselves with the support of learning counselors (see Jones, 1998) or instructional materials that provide...
guidance on individual learning processes such as goal setting, materials selection, and learning and assessment activities (Little, 1991). Other types of support for self-instructed learning can be study buddies (Dickinson, 1987) or, in the case of SLA, native speakers of the foreign language as, for example, in an immersion setting (see Carson & Longhini, 2002). Regardless of how broadly or narrowly self-instruction is defined, the concept always includes learner support measures.

Self-regulated learning (SRL) or autonomous learning is defined as an “active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate and control their cognition, motivation and behavior, guided and constrained by their goals and the contextual features in the environment” (Pintrich, 2000, p. 453). Self-regulated learners develop strategies for adjusting their behavior towards learning goals (Ziegler et al., 2003) autonomously, without human support. Thus CING learners are self-regulated (i.e., autonomous). To clarify, the CING is a self-instruction tool but learners’ learning process involved with it is self-regulated or autonomous learning (AL). Various models for self-regulated learning exist (Boekarts, 1996; Friedrich & Mandl, 1997; Zimmerman, 1998; see also Schmitz, 2003). Pintrich (2000) describes four phases of learning (foresight/planning, monitoring, control, and reaction/reflection) tied to four areas of self-regulation (cognition, motivation/affect, behavior, and context, see Ziegler et al., 2003). These four types of regulation provide various observation levels for the researcher to investigate learner behavior. For instance, the third phase in the learning process, control, involves the “selection and adaptation of learning strategies” as cognitive regulation “selection and adaptation of strategies for the adjustment of motivation” as motivation regulation; “increase or decrease of effort (continue or terminate) and search for help” as behavioral regulation; and “change of task or context or exit from the context” (Pintrich, 2000, p. 454). Thus Pintrich sees learner control as reflected in learners’ active adjustment of learning strategies, of motivation, of the level of their own diligence in the learning process, and of their behavior in the learning task and context.

Pintrich’s approach requires subjects to be able to report their strategies of cognitive, motivational, and behavioral regulation. This means that subjects should have already incorporated these strategies into their learning at the time the study is conducted. I could not assume this to be the case with the subjects in my study, and I therefore adapted my observation of their learning behavior to the specific learning situation of the CING.
3.4.2 Framework for investigating autonomous learning in the CING

Following Ziegler et al.’s (2003) survey of self-regulated learning research, my understanding of self-regulated/autonomous learning generally includes the following components, which we will also call “autonomous learning steps”:

- Goal setting
- Reflection on the task
- Development of a plan
- Selection of potential strategies
- Implementation of these strategies
- Observation and evaluation of the success of the implemented learning strategies
- Adjustment of the strategies, if necessary
- Evaluation of the entire approach to learning and decision making

In my study, learners were provided with a learning task (see Appendix D) to be completed during the observed CING visit. Success was tested with a grammar test on the learning task subject (simple past and present perfect) before and after the CING session.

The CING learning task provided the subjects with a learning goal. They needed to understand the given task in order to be able to act accordingly in their subsequent learning steps. This task realization involved the setting of a goal via reflection on the given task, as well as the development of a plan involving the selection of task-related material (within the CING) and appropriate learning strategies. Learners’ performance was measured by means of their navigational data as well as information collected in guided interviews (Question B3, Appendix G1).

I assumed that learners would probably adjust their strategies during their CING visit more than once. This means that their own evaluation of their learning approach is less a final step than an integrated stage in their autonomous learning. Observation and evaluation lead to an adjustment of the learning approach which is continued in an amended way before it is finalized in the evaluation of the entire learning approach. My framework takes into account this cyclical aspect of Zimmerman’s model of self-regulated learning (1998) (see Figures 25, 26).
Following Ziegler et al. (2003) and Zimmerman and Risemberg (1997), these steps of autonomous learning came to form the basis of my framework for my study of CING learning behavior:

2. Task realization (involving goal setting/ task reflection and development of a plan)
3. Selection of potential (learning) strategies and materials
4. Application/implementation of these strategies
5. Observation and evaluation of the success of 3)
6. Adjustment of strategies if necessary
7. Assessment of newly applied strategies and the entire learning approach

The ways in which these autonomous CING learning steps figure in the learning process is reflected in my model of autonomous CING learning (see Figure 24). This model combines my general understanding of CING learning behavior with Zimmerman’s model of self-regulation (1998) and my adaptation of Ziegler et al.’s (2003) steps of SRL.

**Autonomous learning with the CING: a model**

Autonomous learning in the CING begins with the learning task. The realization of this task involves the selection of relevant information and appropriate learning strategies and their application. This includes Ziegler et al.’s (2003) third step of plan development.

The assessment of strategy selection and the learning approach can lead to an adjustment of strategies and approach if necessary. The adjusted strategies, in turn, become part of a *reloaded* learning process that, ideally, continues to evolve until the learning task/goal has been achieved. Figure 24 shows how autonomous learning steps are interrelated.
As outlined in the “Theories of learning with hypertext” section, successful hypertext learning requires good orientation in the hypertext, goal-relevant material selection, and is likely to be enhanced by support measures (e.g., Gerdes, 1997). Hypertext learners are expected to take learning into their own hands. They must complete every learning step themselves, including independently assessing their own learning performance.

The CING combines hypertext learning with autonomous learning. The framework for CING learning must thus include hypertext behavior as well as autonomous learning behavior (Figure 25). Only then will it be possible to assess learners’ capabilities of individually applying learning strategies and whether support measures are necessary in any of the two areas (hypertext and autonomous learning).
In addition to support for hypertextual learning, there are forms of support for self-regulated learning (e.g. autonomous learning). One form of applied support for autonomous learning can focus on learners’ learning process, which, if successful, will include metacognitive learning strategies that apply to goal orientation, information search, evaluation of information, and the monitoring of the learning process. For example, by means of analyzing a learning task or question learners realize the level of their own knowledge on a topic as well as their knowledge gaps they have. In this way, it is easier for learners to know where they need to go to find necessary materials (see McAleese, 1989) and thus build their individual learning goal and plan for information search as well as evaluation of found information. These strategies form an important aspect of successful learning with the CING and the core of the first part (a) of the ninth research hypothesis (**Autonomous learning strategies help**
learners to define learning goals, select relevant learning materials, and apply appropriate learning steps and strategies for the task).

The analysis of learners’ CING page behavior/usage (by means of log file information on: “relevance of visited topic,” “number of pages visited,” “types of pages visited,” and “time taken for navigation to pages”) with these strategies in mind can show the need for particular strategy support, e.g., where strategies are lacking/not showing in the CING log files. Figure 25 maps the combined model used to research these learning strategies. This model combines information specification and autonomous learning concepts—whereby the categories of research data for autonomous learning were similar to those of hypertext learning (see “Theories of learning with hypertext” section). This combination of models (Figure 26) allowed me to view each step in the CING learning process from a different (hypertext or autonomous) viewpoint. “Specification of information goals,” for example, contains all interview items which are also used to investigate the autonomous learning action of “task realization.” The same is true for the actions of “information search” / “assessment of found information,” and “selection of relevant information.”
The steps in this model and the above models were presented to introduce the development of research measures. The following section will show how the models and other relevant materials are reflected in my demographic questionnaire, qualitative questionnaire, and guided interview.
3.4.3 Study questionnaire development

**Demographic and qualitative questionnaire**

The qualitative questionnaire begins with a set of statements about the subjects’ experience with autonomous, self-regulated learning in the CING. The demographic questionnaire asks about their prior language learning experience (instructed or autonomous). (Users completed both questionnaires after their CING session.)

The quantitative statements are formulated in a general way (e.g., Item 27: “Grammatiklernen mit der CING fällt mir nicht leicht, weil das Programm mir nicht genau sagt, was ich lernen muss und wie oft ich dies üben soll,” [“Studying grammar with the CING is not easy for me because the program does not tell me exactly what I should be studying and how often I should practice”], see Appendix C4). It becomes clear from this statement, that the student expects and likely requires, orientation on learning topic and strategies to learn grammar. This information becomes relevant, when we want to understand how learners evaluated the autonomous learning situation and how they dealt with it from an English language learning point of view, as well as a CING point of view. I follow Oxford and Simmons’ view that “self-direction is not something which happens overnight, but is often ‘a gradually increasing phenomenon growing as learners become more comfortable with the idea of their own responsibility’” (Oxford, 1990, p. 10). The fact that the large majority of my subjects came from a traditional school background where they “were conditioned by years of traditional school culture” (Pemberton, 1996, p. 85)--i.e., strongly directed and not promoting students’ capacity for self-assessment, these questions are particularly important for achieving realistic evaluation outcomes.

Demographic question 8 (see Appendix C2) addresses learners’ prior language learning experience with instructed or autonomous language learning. The answer options are either a description of an instructed language learning environment (“Mit einem Lehrer im Schul- oder Sprachschulunterricht durch Lehrbücher [manchmal Sprachkassetten/Computersoftware oder Videofilme zum Üben].” – “With a teacher at school or language school using textbooks [sometimes cassettes/computer software or videos for practicing]) or of an autonomous learning environment (“Ohne Lehrer/Sprachschule durch den Kontakt mit Muttersprachlern und eigenem Material: Grammatik-/Wörterbuch,
Sprachlernsoftware etc.” – “Without a teacher/language school through contact with native speakers and my own materials such as grammar books, dictionaries, language-learning software, etc.”). There is also an option for individual responses, in case none of these two descriptions match the subject’s language learning experience.

**Questionnaire for the guided interviews**

At the beginning of the guided interview, I posed a general question about subjects’ experience using the CING autonomously (question B2: “Du musstest die CING heute und auch im Dezember ohne Lehrer/Instrukteur nutzen. Bereitete Dir das Probleme?” – “Today as well as in December you had to use the CING without a teacher/instructor. Was this a problem for you?” See Appendix G1) and as a hypertext (Question B1: Du hast schon ein bisschen Erfahrung mit der CING: War die heutige Arbeit mit dem Programm einfacher für Dich, als im Dezember 2005? Warum? - “Now you have some experience with the CING: Was it easier for you to work with the CING today, than in December 2005? Why?”) Even if learners are unable to articulate specific issues with their autonomous use of the CING, this question can at least reveal their general attitude towards the CING and autonomous learning with it.

**Specification of Information Goal/Task Realization**

The guided interview questions on specification of information goals/ task realization were based on the procedural model of hypertext and autonomous CING learning, as well as on my understanding of the learning situation the subjects faced in the study. In order to accurately and appropriately specify an information goal, learners have to consider their own knowledge level and gaps in regard to the simple past and present perfect (questions A7 [idea of own knowledge gaps], A8 [idea of own knowledge gaps] are these questions identical?) as well as the learning goal and its consequences for their learning in the CING (questions B3a and b [task realization], B4a and b [task realization/information goal]). This also includes the first step learners take after entering the CING (questions B4a and B5a/b [information goal/task specification]) in order to determine learning and information goal specification at the outset of CING usage.
Information search/Selection of relevant information

The same questions addressed learners’ information search and selection. The first step in a tool (questions B4a and b [selection of relevant strategy/information], B5a and b [selection of relevant information, beginning of CING use]) is part of users’ information search and can tell us how learners approach their information search from a topical and navigational point of view (e.g., “zeige mir die erste Seite die Du besucht hast”). While the learner shows the selected page in the guided interview we can follow and retrace the learner’s navigational steps and compare them to the log files. Questions B10 (general CING usage) and B11a and b (use of navigational tools, understanding of node structure) were aimed at understanding the problems learners encountered during their information search.

Assessment of found information

Learners’ overall ability to assess the relevance of information was deduced from the log file data (i.e., amount of relevant and irrelevant pages visited). The guided interviews were limited to questions on the first page learners visited (question B5c [material relevant to the learning task] and the page (topic and type) that most helped them in their preparation for the grammar test (questions B6a and b [material relevant to the learning task, topic and type]). Another important factor was learners’ behavior on actual pages (question B7 [general, ranging from assessment of relevance to semantic processing]). This behavior provides information on how the learner assesses the relevance of the currently visited page and on individual learning behavior on the page.

Finally, I expected learners to visit irrelevant pages due to their potential unfamiliarity with the CING node titles. Questions B8a and b (assessment of relevance or failure, why?) were aimed at understanding why particular pages were visited. I also included a general question on learners’ own opinion of the difficulty of finding relevant material (question B9 [topical knowledge of titles, CING difficulty]). Results can contribute directly to an improvement in the CING in the form of an adjustment of particularly “difficult” node titles.
Adaptation of unsuccessful learning strategies

Learners’ CING usage in the study is restricted to a short period of time since the study had to take place in the time slot of the students’ obligatory linguistics seminar. Otherwise the number of subjects would have been considerably lower. This also affects the analysis of their strategy adjustment. Question B10c addresses learners’ ability to solve the learning task as well as the problems they came across in their task completion/grammar test preparation. I also asked learners what support measures they wished were included in the CING (questions B12 and B13b [potential sources of learning and support of learning strategies]) and about general problems they had that were not otherwise addressed in the interview (question 13a).

Self-evaluation of CING use

Although learners only spent a short time working in the CING on a learning task prior to the guided interviews, I hoped to obtain information on their general evaluation of their CING usage and experience in the first session (questions A4 and A5). If learners are able to pinpoint difficulties they experienced during their CING usage, this constitutes a (simple) evaluation of their approach (question B4b [issues with material page visited first can indicate that learner expectation was unfulfilled] and B10a, b). Question 10c addresses their ability to overcome these difficulties.

Overall, these questions aim to represent the theoretical framework on CING use established above as well as give an indication of the subjects’ experience with the CING and thus information on its usability. This usability feedback covers the CING node titles (question B9), overall issues with task completion (B10a, b, c), navigation issues within the program (B11c), as well as learners’ attitudes towards autonomous and hypertext learning and whether prior experience with the CING made a difference in their usage experience (questions A4, A5, B1 [experience with CING HT helps?]), B1 and B2).
In light of considerable research on learning strategies and comprehensive models of strategy classification and investigation (e.g., O’Malley and Chamot, 1990; Oxford, 1990), the scope of the study does not allow for an in-depth coverage of subjects’ learning strategies, but only for a very general and explorative discussion based on the learners’ behavior in the CING (choice of material [pages] / navigation in the CING structure) recorded by the logs and the subsequent guided interviews (see Appendices G1 and G2 for analyses and a summary of the results).

3.4.4 The role of feedback in the framework

The cyclical learning process in the CING (see Figures 25 and 26) is constituted by learners (potentially) returning to information/strategy selection after assessing their strategies or their entire learning approach, adapting these strategies or their entire approach, reselecting their learning materials, and reapplying other learning strategies in the CING. In order to assess the relevance of applied materials and strategies in the learning process, learners require support in the form of feedback that helps them recognize flaws in their learning process (Dempsey & Sales, 1993) (hypothesis 6). Feedback is an important aspect of learning processes (Gagné, 1985) that has been integrated e.g., into focus-on-form instruction and various other learning models (see Ellis, 1998).

**Feedback provision in the learning process**

In a traditional learning situation, teachers provide feedback to show “learners where they have failed to produce a structure correctly” (Ellis, 1998, p. 43). This feedback can be directly situated in the learning process. Even autonomous learning situations such as that of the CING depend on this interactive part of learning for their success. Studies on the success of feedback in learning (Bangert-Downs, Kulik, Kulik and Morgan, 1991; Jacobs, 2002) have found overall positive results for this type of support in language learning. Gass & Selinker (2008) argue that feedback can help make learners “aware of the hypotheses that they are entertaining as they produce language.”

Feedback, however, does not automatically support language learning. Thus Kluger and DeNisi (1996) found that feedback was not the only reason for successful learning while in Schimmel’s study (1983), feedback gave learners an advantage, even if at times only a
slight one. The learning environment and the feedback design have a significant impact on the effect of feedback. Thus metacognitive learning strategies and support are essential for successful feedback (see Renkl, 2000; Bannert, 2003). A lack of these strategies or support can result in the superficial processing of feedback information (see Renkl, 2000) as well as restricted learning outcomes in knowledge transfer tasks (see Bannert, 2003).

Research indicates that elaborate feedback (including information on the reason an answer is incorrect) is more helpful than the mere knowledge of results (see Dempsey, Driscoll, & Swindell, 1993), i.e., correct or incorrect (also called minimal feedback). Furthermore, computer feedback (Nagata, 1995), like that in the CING, is considered to be less successful than principle-based, intelligent feedback (Nagata, 2002). I will now turn to the type of feedback the CING can provide (for an overview of different feedback types and their impact on learning, see Mory, 1996).

Feedback in the CING

As outlined in Chapter 2, the CING provides minimal feedback of the knowledge of results type. It appears as the correction (correct or incorrect) of learners’ completed exercises and is also integrated into the content page exercises in the form of comprehension checks, which are meant to help learners understand the particular rules. Both feedback options, however, are only provided upon the learner’s request after the completion of an exercise (e.g., Check in the CING Exercises pages provides minimal feedback).

Problems that can result from this learner-controlled form of feedback are indicated, for example, by Aleven and Koedinger (2000), who found that their subjects (15-year-old school pupils in math instruction) did not have the necessary metacognitive skills to control the learning process and its integration of feedback. Suthers et al. (2002) discovered that learners only rarely requested feedback during their learning and applied it inefficiently (Cohen 1987, Jacobs 2002). In contrast, other studies found a high demand and application of learner-requested feedback without the provision of learning strategies or support (Heift, 2001).

Overall, it is generally accepted today that feedback is always more helpful to learners than no feedback (Clariana, 1993; Smith and Ragan, 1993; Azevedo & Bernard, 1995). This is also true for minimal (correct/incorrect) feedback, although there is no consensus yet on the most effective type of feedback for learning (Huth, 2004). There is general agreement among
researchers that it is necessary to ensure that learners process the feedback information during their learning experience. Only then does feedback information have the potential to have a positive influence on learning (Hancock, Thurman, & Hubbard, 1995). Dillon and Gabbard (1998), for example, found that the type of feedback provided through comprehension checks, similar to those in the CING content pages (Explanation and Discovery), can help prevent learner misunderstanding and support their acquisition of the correct information. This kind of feedback involves learners in the active integration of learned and feedback information in their rule comprehension.

In addition to learner processing, characteristics of the learning situation (learning goals, learning content, learning tasks, and related requirements) and of the individual learner (prior knowledge, metacognitive knowledge, and motivational factors) also affect feedback success. Huth (2004) summarizes these as individual factors, situative factors, and feedback function. The design and development of the CING’s feedback options do not reflect this depth of consideration, but learners’ experience with the feedback will be analyzed with reference to these research findings.

*Researching the impact of feedback on CING learning*

In order to capture learners’ experience with and opinion of the CING feedback, I used statements in my quantitative evaluation questionnaire (see the “Empirical analysis: Results” section in chapter 4) that addressed their experience with the knowledge of results type. These statements focus on the usability and comprehensibility of the minimal feedback on the exercises (e.g., “Die Fehlerrückmeldungen zu meinen Übungsaufgaben waren klar und deutlich präsentiert.” [“The feedback on the mistakes in my exercises was presented in a clear way.”]). I wanted to understand if the minimal exercise feedback in the CING is as unsupportive to learners (quantitative questionnaire statement: “Die Fehlerrückmeldungen zu den gelösten Übungssätzen halfen mir nicht, meine Fehler zu verstehen oder zu korrigieren.” [“The feedback on the mistakes I made in the exercises did not help me to understand or correct them.”]) as research has indicated (e.g., Dempsey, Driscoll, & Swindell, 1993; Aleven & Koedinger, 2000) or if it is rather helpful to their learning experience (quantitative questionnaire statement: “Durch die Fehlerrückmeldungen zu meinen bearbeiteten Übungsaufgaben verstand ich, warum meine Antworten falsch waren.” [“The feedback on the mistakes I made in the exercises helped me understand why my answers were wrong.”]).
Since I was unable to observe learners’ usage of the Comprehension Check exercises (e.g., returning to the rule material to work on knowledge gaps the comprehension check indicated) and feedback, I was unable to draw conclusions on how this usage might impact learners’ experience with this particular feedback. A more focused investigation of learners’ implementation of the comprehension check feedback with the content material followed by an interview or knowledge test is necessary to obtain more detailed information on this aspect of the CING.

3.4.5 Motivation and learning in the CING

Motivation in learning means that a person wishes to acquire knowledge (Rheinberg, 1989) or particular skills (Schiefele, 1990). As noted above, feedback is only expected to make a difference in learning when learners actually process the accessed information during their learning experience (Hancock et al., 1995). In this context, Stark (2001) proposes that learners’ processing and use of feedback information depends on motivational and metacognitive variables in the learner. Dörnyei and Skehan, in their survey of research findings on motivation in learning, state that “self-regulation and motivation are inextricably bound together” (2003, p. 612). Motivation, they write, “concerns the direction and magnitude of human behavior or more specifically (i) the choice of a particular action, (ii) the persistence with it, and (iii) the effort expended on it” (Dörnyei & Skehan, 2003, p. 612). Schiefele (1996) argues that motivation has a significant impact on cognitive processes, including those involved in learning.

On these grounds, I included an investigation of my subjects’ motivation to learn the grammar topic involved (Appendix C2). Given that the subjects of my study were all enrolled in different study programs at the Institute of Applied English Linguistics at the TUC and planned to continue studying the English language into the future, there was clear evidence of their motivation to study English grammar. Thus a more specific investigation of motivation (rather than simply to learn English grammar) seemed necessary.

In his account of motivation, Schiefele (1996) makes a distinction between intrinsic and extrinsic motivation. He states that a person is either motivated by an object focus (gegenstandscentriert) or an action focus (handlungszentriert). Intrinsic motivation has an action focus and is based on the person’s joy, interest, excitement, or satisfaction with the
action that is involved in the learning activity. Extrinsic motivation has an object focus and is based on the person’s wish or intent to complete a particular learning activity in order to generate positive results or avoid negative ones.

**Investigating learners’ motivation**

This distinction is represented in demographic questions 11 and 12 on learners’ attitude towards the importance of successfully completing the language practice courses at the institute this term (extrinsic motivation, question 11) and the importance of speaking grammatically correct English with native speakers of English at the moment of the study (intrinsic motivation, question 12).

While I considered this part of the investigation important for arriving at a holistic picture of how learner characteristics (e.g., motivation, language level) can have a positive or negative impact on the CING learning experience, I am also aware of the issues that come with an investigation of learner motivation. Investigating learning motivation can be similarly complicated as “learning actions are often extrinsically (e.g., to avoid negative evaluations from teachers and parents) as well as intrinsically motivated” (translated by the author, Schiefele, 1990, p. 325) (e.g., to prepare for a school exchange or the participation in a foreign-language theater play), which is only natural in a school environment where regular exams and final grades are important factors in the external control of students’ learning.

Due to these factors, I investigated correlations between the results from demographic questions 11 and 12 and the other variables, but refrained from drawing definite conclusions from the findings. I include the preliminary results to enrich the study and to indicate the possible effect motivation has on learning results with the CING, and to provide a starting point for future research on the CING and learner motivation.

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24 **Item 11**: Wie wichtig ist Dir im Moment (in diesem und im kommenden Semester) der erfolgreiche Abschluss deiner Sprachpraxiskurse über die englische Grammatik? [How important is it to you to successfully complete your language practice courses on English grammar (this or next semester)]; **Item 12**: Wie wichtig ist es Dir momentan grammatikalisch korrektes Englisich im Gespräch mit englischen Muttersprachlern (Freizeit/ mit Freunden) zu sprechen? [How important is it to you at the moment to speak grammatically correct English with English native speakers (in your free time/with friends)?] Appendix E.
3.4.6 Learnability of learning strategies

The second aspect of the ninth research hypothesis (*Learning strategies can be learned*) is not part of this study, as the time and resources available did not allow for learning strategy training sessions. It nevertheless constitutes an important aspect for the future improvement of the CING.

According to Wenden, training studies in learning strategies (see Brown et al., 1983) showed that learners with little knowledge of learning strategies “could be trained to use strategies with a consequent improvement in their task performance” (Wenden, 1991, p. 30). This learnability of learning strategies through training was confirmed by Bannert (2003), who found that metacognitive strategies can be taught to learners and lead to improved learning results. Bannert’s concept of strategy instruction could prove useful for strategy implementation in CING learning.

3.5 Summary and conclusion

This chapter draws on various research areas to lay the theoretical groundwork for investigating learners’ experience and behavior with the CING while they prepare for a learning task. The “Simple past and present perfect” section describes and critiques the CING’s content and presentation of the simple past and present perfect (including tense and aspect). Comparing the CING to other major grammar works, I showed that the CING does not include some of the grammar rule aspects belonging to the simple past and present perfect, and presents the simple past in an information node that can be misleading to learners.

In 3.2.3 I provide a survey of SLA theory relevant to learning with the CING, along with research conducted with the tool prior to this study. My research hypotheses are based on research on input and instruction in language acquisition, the two major SLA areas applicable to a self-instruction tool like the CING.

In the section “Learning with hypertext” (3.3.3) I address the advantages and challenges a hypertext presents to learners. These include the freedom of integrating information into a newly generated network (such as the CING content network) as well as cognitive overload. Hypertext learning requires learners, to a greater or lesser extent, to organize their learning activity themselves. This can involve establishing an appropriate learning goal and choosing material as well as navigational options relevant to the learning
experience. Prior hypertext learning experience and advanced learner knowledge of the topic in question have been found to be potentially conducive to learners’ learning success with a hypertext. My analysis of CING support measures for hypertext learning shows that the tool only provides some of the measures suggested by researchers (e.g., Gerdes, 1997).

In section 3.4.2 I look at theories and realities of autonomous (self-regulated) learning. Just as hypertext learners are expected to recognize and select relevant material from the hypertext themselves, autonomous learners must follow steps in their learning process on their own. This commonality between hypertext and autonomous learning, and the combination of the two in the CING, led me to develop a combined model of hypertext and autonomous learning in the CING. My aim was to explore which strategies my mainly school-instructed subjects were actually implementing.

This section also briefly discusses the influence and importance of feedback and motivation in learning. Research has repeatedly proven the importance of feedback in learning. Since the CING contains feedback, but also appears to contain some shortcomings as a hypertext and autonomous learning tool, I included research measures on learners’ experience (qualitative questionnaire statements on learners’ experience with the CING feedback) in the study in order to suggest possibilities for a future improvement of the CING feedback, if necessary. I also addressed the subjects’ type of motivation (intrinsic or extrinsic) in the demographic questionnaire. While the limited scope of the study precluded clear findings on this issue, the results are suggestive of the role motivation plays in learning with the CING. The following chapter presents the research sessions I conducted and the design and development of the research questionnaires.
4. Evaluation of the CING

The CING was originally designed as a reference tool for teachers and advanced learners of English as a second and foreign language (particularly for German teachers and learners). As the need for English-language learning support at the University of Chemnitz grew, the expansion of the tool’s target learner group to include undergraduate students came under discussion. I designed my usability study for this purpose.

A first analysis of target learners’ (first year students of English at the CUT) behavior and their experience with the CING (Heller, 2004a) suggested a positive general learner attitude towards the tool, while learners also experienced orientation problems within the tool and had difficulties comprehending some of the material. A subsequent explorative small-scale study (Heller, 2004b) found that learners who found and used CING content pages that were relevant to the given learning task (preparing for a grammar test) while they navigated in a goal-oriented way also understood the hypertext content structure of the tool and were able to self-guide their work following individually set (grammar) learning goals. Study subjects with these particular abilities were also able to describe their problems with the CING more accurately than those with severe orientation and comprehension problems.

4.1 Background to the evaluation

The current study consists of a quantitative, empirical part as well as of a qualitative, explorative part. Before exploring the learning situation with the CING, I assembled a set of assumptions, which I also call hypotheses, representing findings of previous research on the CING as well as a body of theory to guide my study of the CING usage experience (see also chapter 3) and to inform future implementations of the tool in grammar learning and teaching. These assumptions helped me to translate the important aspects of the evaluation of the CING

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25 The general impression of the CING was positive for 72.7% of all subjects (78%) who commented on their “General impression of the CING” (n=33) (Heller, 2004a, p. 133). 44.8% of all subjects (n=29) who provided comments on the topic of “Clearly arranged/logical” referring to the CING’s presentation of material, considered the material to be arranged unclearly and illogically (Heller, 2004ª, p. 33). A larger group of learners also stated that the CING material was unfamiliar to them (meaning the vocabulary of the grammar content, [rules or language examples]). (60.3%; n=66) (Heller, 2004ª, p. 32), while 45.6% (n=66) stated that the program’s content was difficult to understand (Heller, 2004a, p. 34).

26 In my studies and in this research learners were given the learning task to prepare for a grammar test. In the following I use the terms “preparation for the task” and “preparation for the test” interchangeably.
as a grammar instruction tool into the different quantitative and qualitative research measures (tools). These measures are the main focus of this chapter.

4.2 Evaluation instruments

Based on the prior findings and an evaluation of the relevant theories, I developed my research (or evaluation) tools over the course of 2004 and 2005. These included pre- and post-test designs (see Appendix A4\(^27\)) to evaluate learners’ grammar skill development after CING usage, a questionnaire designed to collect data on the characteristics of the target learners (first year students of English at the CUT), and a closed questionnaire on learners’ experience with the CING (material comprehension, feedback, salience of the material, autonomous learning with the CING, and vocabulary).

One potential problem of user-based evaluations of a product is that subjects might not want or be able to articulate crucial information to the researcher. Questionnaires are a way for subjects to anonymously introspect and self-describe (Mummendey, 2003) and, “if carefully controlled, can aid in discerning patterns in large amounts of information” (Brown, 1988, p. 3). For this study I developed two questionnaires: the Learner Profile Questionnaire and the Experience Questionnaire. I will now summarize the development process and the aims of each evaluation tool.

4.2.1 Developing a measure of learning success

One of the core questions I wanted to answer in my study was: Does working with the CING lead to an improved application of English grammar structures in intermediate learners? A standardized observation of the improvement of learners’ grammar rule application requires an instrument of measurement that is reliable both in terms of implementation (research environment) as well as material (amount, topic, and difficulty). I developed a pre- and a post-test on learners’ grammar usage skills before and after their work with the CING with this requirement in mind. The same set of test items was given in both tests: ten gap-fill sentences on a common grammar problem for German learners of English, the simple past and present perfect (see chapter 2). Originally, the test also included items on the simple present and present continuous, but the allocated time of 40 minutes of CING usage did not seem

\(^{27}\) The tables of Appendix A4 show the calculation results received during the test-item development.
sufficient to cover this much material. All test sentences on the simple present and present continuous were thus excluded from the final test version.

**Grammar-test design: first version**

After analyzing the CING’s pages on the simple past and present perfect (see chapter 3 and Appendix O), I created a set of 33 decontextualized gap-fill items (in 11 sentences) representing the rules contained in the respective CING pages. The sentences were chosen for their clear application of the grammar rule. A team of researchers from the CUT English Linguistics and English Language Practice departments assessed the adequacy of vocabulary, signal words, and sentence formulations of the test items. Any elements that made the grammatical structures too obvious or too ambiguous to learners were exchanged for appropriately challenging alternatives. After these revisions, the entire item set was tested for reliability with the help of two equivalent tests (a pre- and a post-test). A group of learners whose profile was identical to those participating in the main study ($n^{29} = 70$) were given 35 minutes for each test (33 items each) before and after working in the CING for 40 minutes. All tests were presented in pencil/paper form.

We then analyzed the results in terms of the difficulty and discriminatory power of the items (see Appendix A2). Item difficulty ($p$) is the average of the proportion of students who answered an item incorrectly and was established with the help of the mean value ($M$). An appropriately demanding item ($p$) is located between $.4 < .6$ (i.e., between 40 and 60% of the subjects answered the item correctly) and items with values below .2 and above .8 are usually excluded from further research (see Mummendey, 2003, p. 73).

To indicate whether an item distinguishes clearly between strong and weak learners, the value of discriminatory power ($r$) is calculated for each test item through the correlation coefficient from a *Pearson’s Product Moment Correlation*, also called Pearson’s ‘$r$’.

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28 For reasons of comparability, the test items were designed to be similar to the sentences the CING uses in its exercises. These exercises (see chapter 2) consist of a set of 10 to 20 decontextualised gap-fill sentences. This material was selected from corpora of English language material such as the BNC (*British National Corpus*) or the CTC (*Chemnitz Translation Corpus*). My test items were also selected from these two corpora.

29 $N$ = “number of participants.”

30 This discrimination coefficient is reported as the item discrimination coefficient, or the point-biserial correlation between item score (usually scored right or wrong) and total test score. (Retrieved from [http://webcache.googleusercontent.com/search?q=cach e:yzBw8F2Fw48J:www.education.com/reference/article/item-analysis/+Psychology+/Discrimination+Coefficient&cd=10&hl=pt-BR&ct=clnk&gl=br&client=firefox-a](http://webcache.googleusercontent.com/search?q=cach e:yzBw8F2Fw48J:www.education.com/reference/article/item-analysis/+Psychology+/Discrimination+Coefficient&cd=10&hl=pt-BR&ct=clnk&gl=br&client=firefox-a))

31 “A correlation coefficient is a number between -1 and 1 which measures the degree to which two variables are linearly related. If there is perfect linear relationship with positive slope between two variables, we have a correlation coefficient of 1; if there is positive correlation, whenever one variable has a high (low) value,
Discriminatory power is find an English source for this definition. The value of discriminatory power establishes the homogeneity of the test for each single item as well as its internal consistency. $R$ lies between $.3$ and $.5$ for items that discriminate well between weak and strong learners (see Mummendey, 2003, p. 74).

Pre- and Post-test: second version

The subsequent test consisting of grammar sentence gap-fills from version 1 (Appendix B1) was administered in June 2005 with a group of 28 students who presented the same characteristics as the subject group of December 2004 and who hadn’t already taken part in the research sessions. The subjects were given eight minutes for each test and a 30-minute window for CING work in between.

To avoid subjects recollecting answers from the pre-test, I rotated the item sequence in the post-test. All tests were again presented in pencil/paper form and the items were arranged as follows:

<table>
<thead>
<tr>
<th>December 2004</th>
<th>June 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 33</td>
<td>Item 1</td>
</tr>
<tr>
<td>Item 2</td>
<td>Item 2</td>
</tr>
<tr>
<td>Item 5</td>
<td>Item 3</td>
</tr>
<tr>
<td>Items 13 and 14</td>
<td>Items 4 and 5</td>
</tr>
<tr>
<td>Item 16</td>
<td>Item 6</td>
</tr>
<tr>
<td>Item 21</td>
<td>Item 7</td>
</tr>
<tr>
<td>Item 1</td>
<td>Item 8</td>
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<tr>
<td>Item 4</td>
<td>Item 9</td>
</tr>
<tr>
<td>Item 24</td>
<td>Item 10</td>
</tr>
</tbody>
</table>

Figure 27: Grammar test item allocation after item analysis

In the ensuing analysis items were again coded 1 for correct answers and 0 for incorrect answers. As with the first test version, the new results were analyzed for mean value and value of discriminatory power.
The calculation of this new test's item difficulty (Appendix A5, Table 2) showed that items 1 and 8 were still too easy for learners ($M_1 = .96$ and $M_8 = .96$ with a low value of standard deviation of .189 for both items). The value of discriminatory power (Appendix A5, Table 1) for item 1 ($r_1 = -.73$) was unacceptable, making modification necessary. Item 8 was also modified as its mean value of .96 was exceptionally low and therefore unacceptable, although its value of discriminatory power ($r_8 = -.194$) was acceptable.

The number of 28 subjects made the calculation of the value of discriminatory power difficult, as many calculated values were not even near the required range. The data could thus not be considered representative, but served rather as a guideline for comparing results of the first and second version of the test design and assisting in the selection and modification of the items to be used in the actual study.

Items 1 and 8 originally read:

Item 1: Eliah (stop) _______ for a second, then (turn) _______ around and with all his might he (kick) _______ the door open. We couldn’t believe it.

Item 8: While her parents and sisters were sleeping she quietly (enter) _______ the house from the back and collected all the things she had forgotten last time.

Both sentences contained explicit hints (item 1: couldn’t believe; item 8: collected) on the correct tense forms for the verbs in the gaps. To eliminate this influence on learners’ performance, I modified the sentences as follows:

Item 1: Gascoigne (stop) _______ for a second, then (turn) _______ around and with all his might he (kick) _______ the ball into the goal - Glory for England of the early 90’s.

Item 8: While her parents and sisters were sleeping she quietly (enter) _______ the house from the back to collect all her things.

4.2.2 Development of questionnaires

Learner problems with the CING and research theories that were tested in small-scale and pilot studies formed the basis for the creation of a set of realistic and reliable questionnaires.

One questionnaire was designed to collect relevant information on the subjects’ individual characteristics that could potentially influence their CING experience and work
(e.g., age, level of English language proficiency, prior experience with autonomous learning, their understanding of CING titles and their existing knowledge of the grammar content presented in the CING). The other questionnaire contained a set of closed statements on five different topics (salience of the material, metalanguage, vocabulary, feedback, topic titles and autonomy) that can influence learners’ usage of and experience with the CING. The questionnaires were designed with the greatest possible linguistic clarity in mind (see Wosnitza & Jäger, 1999, p. 83). They were tested and evaluated by another group of students for clarity.

4.2.2.1 Learner profile questionnaire

This questionnaire was meant to establish the learner profile of first-year students of English at the Chemnitz University of Technology. It was also intended to ensure that I was investigating a homogeneous group of subjects (in terms of their mother tongue, educational background, and level of English language proficiency). The information derived from the questionnaire allowed me to compare aspects of the learner profile with the data collected on learners’ CING experience and performance in order to reveal relations between, e.g., learners’ level of English language proficiency and their navigation in the CING or experience with the tool’s content.

Learner profile questionnaire: first draft

My first study of CING usability with first-year English students found no relation between learners’ overall level of English proficiency and their problems with the CING material and finding their way around the program (Heller, 2004a, p. 124). There was thus a need to further investigate the reasons for learner problems with the CING.

As navigation within the tool takes place mainly via its topic page links (see chapter 2), it was important to explore learners’ understanding of the CING’s topic title metalanguage (e.g., simple past, speech time, and reference time) (see chapter 3) and its potential impact on page use in the program. Another issue of considerable relevance to this study is the CING’s lack of instruction guidance. If learners are used to guided instruction (i.e., with a teacher; see chapter 3), they might lack the necessary learning skills for a self-instruction learning tool like

35 The subjects’ overall level of English proficiency was measured with the help of the “Placement Test” results achieved at the beginning of their studies at the CUT. Information on the content and structure of the Placement Test can be viewed at http://www.tu-chemnitz.de/phil/english/BA/BA_prospectivestudentsinfo.html.
the CING. The result can be the failure to use the program efficiently according to their needs (cf. Tan and Chan, 1997). Orientation within the CING proved to be a problem for learners in all prior CING studies (Heller, 2004a). In a small-scale study conducted in August 2004 (Heller, 2004b), I found that a command of autonomous learning strategies seemed to reduce this problem for the subjects. Those strategies, however, did not solve the problem entirely, since even learners with an apparently efficient CING usage pattern reported problems with orientation and material and topic comprehension. I thus formulated questions on learners’ knowledge of English grammar and their experience with autonomous and computer-assisted language learning (questions 6, 8, 9, and 10).

Other variables were included in the first draft of the learner profile questionnaire (Appendix D):

- Age, gender, mother tongue (questions 1, 2, 3)
- Type of school education and type of English language instruction in the last three years of high school education (questions 4 a and b)\textsuperscript{36}
  This item operationalizes the construct of frequency (hours per week), duration (2 or 3 years), and type (major or minor subject) of English language instruction subjects received during their final years of high school as well as the type of school (Gymnasium or Comprehensive School) they attended.
- Experience with English language exchanges/courses (question 5)
  This item is aimed at operationalizing the construct of learners’ additional instruction in English through contact with NS and life in English-speaking countries.
- Type and results of subjects’ last English exam (questions 6 a and b)
  This item operationalizes the construct of learners’ overall level of English language proficiency as tested by a grammar test like the CUT Placement Test.
- Experience with certain types of language instruction/learning (question 7)
  This item operationalizes the learners’ ability to learn autonomously.
- Attitude towards the use of computers in language learning (question 8)

\textsuperscript{36} In the final years at a German Gymnasium (at the time of research the final three years, except for Saxony where it is the final two years), instruction is broken down into semester-length basic and advanced courses (Retrieved from http://www.rsa-leipzig.de/gymnasium_stundentafel.html). The goal of these and other courses is “to deepen students’ overall education and prepare them for university” (ibid., my translation). All students are given a certain degree of freedom in choosing their basic subjects alongside the required core subjects (German, Mathematics, Languages [foreign]). Advanced courses are intended to foster “intensive inquiry and understanding,” while the basic courses aim to convey basic “content and methodology.” Advanced subjects are taught five to six hours a week and basic subjects four hours a week (Retrieved from http://www.rsa-leipzig.de/oberstufe_unterricht_und_faecher.html)
This item operationalizes learners’ level of fear or comfort with computers, which can affect the successful usage of technology in learning (see Richter et al., 2000).

- Internet usage habits (question 9)
  This item was implemented to operationalize learners’ overall hypertext navigation proficiency, but since each answer was very individual and did not help to build answer categories it did not produce conclusive data on learners’ experience with hypertext navigation and was therefore discarded from the questionnaire.

- Motivation to learn the English language (questions 10 and 11) (see chapter 3)
  - This item operationalizes learners’ level and type of motivation to learn English grammar. In this first draft the variable and its options were defined in a way that was unrelated to learners’ grammar learning abilities.

- Knowledge of the difference between the simple past and the present perfect in English (question 12)
  This item was presented as an open question exploring learners’ understanding of the grammar topics included in the grammar tests.

- Metalanguage terms in CING page titles (simple past, present perfect, simple present and present continuous\(^\text{37}\)) (question 13)
  This item was included to operationalize the level of learners’ understanding of CING titles on the above grammar topics. Learners’ allocation of titles to the grammar topics was expected to indicate learners’ knowledge level of the grammar topics related to (metalanguage) terminology.

- Experience with the CING (questions 14 a and b)
  This item operationalizes learners’ prior knowledge (if any) of the CING structure and content.

\(\text{Learner profile questionnaire: second draft}\)

\text{Learners’ Computer and Internet Usage habits}\n
Questions 8 and 9 in this questionnaire collected information on students’ attitudes towards the use of computers in language learning and their habitual Internet usage behavior. While question 8 was intended to provide insight into learners’ general attitude towards computers,\(^{37}\)

\(^{37}\) As noted above, the simple present tense and the present continuous structure were not included in the final questionnaire, nor in the data analysis for the first questionnaire draft.
question 9 was added to investigate learners’ Internet experience with different levels of hypertext complexity (e.g. commercial pages with a flat content hierarchy, web-based library catalogues with high content complexity). The answer categories for question 9 (eight different types of Internet usage), however, did not adequately reflect the demands different kinds of Internet content place on learners’ skills and cognition. We thus excluded these items from further investigation. The question was changed so that each type of hypertext usage was given its own Likert scale, providing me with information on how frequently learners used the different types (question 10, Appendix D).

Experiences with Language Exchange Programs and Language Instruction

Question 6a, on learners’ experience with English-language exchange programs, was included in the second draft without modification. Question 8, regarding learners’ experience with different types of language instruction, was altered, as the answer options were too complex for organized data collection. The new answer categories were clearly restricted to a teacher-instructed learning environment (“With a teacher at school or language school using textbooks [sometimes cassettes/computer software or videos for practicing]”) or a self-instructed environment (“Without a teacher/language school through contact with native speakers and my own materials such as grammar books, dictionaries, language-learning software, etc.”; see Appendix D).

Motivation to learn English Grammar, Grammar and CING title comprehension

Questions 10 and 11 were aimed at measuring learners’ motivation to learn English grammar. The questions, however, were not limited to grammar learning and rather addressed language learning in general. I thus amended the statements on extrinsic and intrinsic motivation so that they directly related to the English grammar-learning situation of the subject group.

Question 12 was excluded from the study, as the open answer format made it difficult to establish actual comprehension levels on the simple past and present perfect. Question 13, on the other hand, provided sufficient information on learners’ comprehension of topic titles and was thus included into the second draft unchanged.
4.2.2.2 CING experience questionnaire

In addition to the questionnaire on the subjects’ profile, I also developed a second questionnaire on learners’ experience with the CING, the “experience questionnaire.” I conducted three preparatory test studies including statistical analyses of interrater reliability (Johnson, 1992) and content validity (Brown, 1988) in order to ensure the questionnaire’s objectivity and relevance.  

**CING experience questionnaire: first draft (December 2004)**

Before integrating the theoretical background into the questionnaire design, I conducted an exploratory investigation of users’ CING experience. This included an open questionnaire on the following topics, designed to elicit the widest possible range of answers on potential problems in these areas:

1) General attitude towards the CING, need for changes
2) Presentation of the CING material
3) CING content: grammar, language material
4) Navigation
5) CING feedback

The analysis and categorization of the open answers proved challenging, since the number of answers in each category were too small to show statistical significance or reveal major problems in learners’ experience with the CING. Accordingly, the new version of the questionnaire was designed to ensure statistical power of results and to minimize the likelihood of incomplete questionnaires.

**CING experience questionnaire: second draft (June 2005)**

The second version of the experience questionnaire included closed items on the following topics: Salience of grammar structures, Metalanguage, Vocabulary, Feedback, Comprehensible Topic Titles, and Autonomous Learning.

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38 Bryman and Cramer (2005), who refer to interrater reliability as inter-coder reliability define it as follows: “…in order to search for general underlying themes to answers” […] “a researcher needs to code people’s answers to interview questions” […] “with more than one coder”. […] An estimate of inter-coder reliability should be provided to ensure that the coding scheme is being consistently interpreted by coders” (Bryman & Cramer, 2005, p. 80).
Each of these categories had a set of five closed statements, some of which were selected from learner answers given in the first open questionnaire version. In this way, each category reflected both my theoretical assumptions and the experiences and problems learners had articulated in the first open questionnaire. Two statements per category were formulated negatively and three positively.

For the first investigation of interrater reliability and the questionnaire’s content clarity, a small-scale research session was conducted with a group of 15 third-term students of English, who were all part of a seminar on research methodologies. As this was my first investigation into the formulation and terminology of the questionnaire statements, I chose a more experienced group of raters than the target learners. It seemed to me that learners with a background in research methodologies and who were further along in their studies would notice and maybe even help us/me solve problems in statement formulation or topic selection that first year-students would not be able to recognize.

At the start of the session, the subjects were introduced to what they had to rate and on what basis. The questionnaire categories of metalanguage, vocabulary, topic titles, autonomous learning, salience of structure, and feedback were explained to them along with the nature of the questionnaire and the task they would be asked to complete in the CING.

Then the raters were instructed to use the CING to prepare themselves for a test on the correct application of the simple past and the present perfect. They were given 20 minutes for this task, which was shorter than in the actual research setting, but was considered sufficient for them to familiarize themselves with the program in order to be able to give feedback.

Next raters were asked to judge the relevance of all statements (Appendix E) to their CING work and associate the statements with the appropriate topic categories, which were projected onto the wall in front of the classroom. A discussion on possible problems with the

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statements followed, the results of which my assistant and I entered into a pre-prepared note grid (Appendix H2). This evaluation led to an adjustment of several statements, such as in the example below (see Appendix K and statement 5 in Appendix H1):

Original formulation: “Wie die Grammatikstrukturen angewendet und gebildet werden, wurde in den CING Regelerklärungen und Beispielsätzen klar hervorgehoben.” (“The application and formation of the grammar structures were clearly set forth in the CING rule explanations and example sentences”, Salience of structure). New formulation following the first rater session:

“Wie das Simple Past und Present Perfect angewendet und gebildet werden, wurde in den CING Regelerklärungen und Beispielsätzen klar hervorgehoben.” (The application and formation of the simple past and the present perfect were clearly set forth in the CING rule explanations and example sentences”).

Final draft of the CING experience questionnaire

With the set of 30 improved statements (Appendix H1), I then conducted another research session in June 2005 with a group of 29 first-year students of English to test the reliability of our set of examples via a calculation of Cronbach’s ť. The group of learners received an introduction to the session (Appendix C2), a handout with clear instructions on the task to be completed in the CING, and questionnaires. Each student was given a random login number to ensure the anonymity of the data. Subjects completed the learner-profile questionnaire online, filled in the pre-test (paper and pencil), worked in the CING for 40 minutes, completed the experience questionnaire online (Appendix I), and, finally, took the post-test (paper and pencil).

The coded learner judgments regarding the questionnaire statements (A1, A2, etc.) were then entered into an SPSS spreadsheet for each subject. User judgments were presented

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41 This form of correlation established a reliability estimate for the entire questionnaire by calculating reliability estimates for each item. The Cronbach-ť value indicated how consistently an item represented actual learner judgment. The greater the value (>1.), the more consistent and reliable an item was (Brown, 1988, p.99) in its representation of the learners’ evaluation of their CING. “Cronbach’s alpha splits all the questions on your instrument every possible way and computes correlation values for them all. In the end, your computer output generates one number for Cronbach’s alpha—and just like a correlation coefficient, the closer it is to one, the higher the reliability estimate of your instrument. Cronbach’s ť is a less conservative estimate of reliability than test/retest” (Reliability and Validity: What’s the Difference, n.d.). SPSS was used for the calculations.

42 This group of learners was comprised of German first-year students of English at the CUT. All were native German speakers and the majority had finished their secondary schooling around one year ago.
on a 5-point Likert scale that ranged from *totally agree* = 1 to *do not agree at all* = 5. The Cronbach calculations (Appendix J) revealed that learners consistently evaluated the statements in the categories *salience of structure* (Cronbach ά: .8523), *topic titles* (Cronbach ά: .8713), and *autonomy* (Cronbach ά: .8284) and required no further adjustment. The statements in the categories *metalanguage*, *vocabulary*, and *feedback*, did, however, require some modification. The item total statistic revealed that deleting items 7 and 19 from the sets improved the overall ά-value, as they were evaluated inconsistently within their topic group. The statements (7, 13, and 19) were reformulated to improve their consistency for future research sessions.

Statement A7 (*metalanguage*)

“Durch die schwierigen Grammatikbegriffe in den Regelerklärungen hatte ich Probleme, die Anwendung der Grammatikstrukturen zu begreifen.” (“The difficult grammar terms in the rule explanations made it hard for me to understand how to apply the grammar structures.”) (Appendix E)

The aim of statement A7 was to detect learner problems with the metalanguage of the CING rule explanations. The research session with the test group revealed the possibility that the term *Grammatikbegriffe* (grammar terms) might hinder learners in their statement evaluation, as they might have a different understanding of *Grammatikbegriffe* than the researchers, or even be unsure about the meaning of the term. I also found it necessary to clearly define the adjective *schwierig* (difficult) in the item, since it could be interpreted to refer to difficulties in vocabulary comprehension or to difficulties in the comprehension of grammar terms (metalanguage). The statement was rewritten accordingly:

“Durch die mir unverständlichen Grammatikbegriffe in den Regelerklärungen hatte ich Probleme, die Anwendung der Grammatikstrukturen zu begreifen.” (“There were grammar terms in the rule explanations I did not understand and this made it hard for me to understand the grammar structures.”) (Appendix I)

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43 The term “item total statistic” denotes the SPSS program function used to display the Cronbach- ά calculation and the discrete item results. It shows which items were rated inconsistently compared to the group of related items.
Statement A19 (feedback)

“Die Fehlerrückmeldungen zu meinen Übungsaufgaben waren unübersichtlich präsentiert und halfen mir nicht, meine Fehler zu korrigieren oder zu begreifen, worin mein Fehler lag.” (“The feedback on mistakes I made in the exercises was confusing and did not help me to correct my mistakes or understand what was wrong about my answers.”) (Appendix H1)

This statement was meant to reveal learner problems with the CING feedback function. The feedback provided by the CING is separate from the actual exercise sentences (Figure 3) and users might therefore not be able to relate it to the respective answers. I intended learners to understand “confusing” to mean “badly presented,” but this turned out to not necessarily be the case. In order to ensure that the statement would produce evaluations of the presentation form of the feedback rather than of other aspects of the CING design, I rewrote the statement as follows:

“Durch die unübersichtliche Präsentation der Fehlerrückmeldungen zu den Übungsaufgaben, halfen mir die Rückmeldungen nicht bei der Korrektur meiner Fehler.” (“The feedback on mistakes made in the exercises was presented in a confusing way and did not help me correct my mistakes.”) (Appendix I)

In the final version of the questionnaire, the items were presented in a random sequence (see Mummendey, 2003, p. 67) in order to minimize subjects’ perception that they were being asked to answer the same items several times because of the similarity between items belonging to the same category.

With the help of explorative questions, learner statements, and statistical analysis, I generated a test design for measuring learning performance on a grammar test (Appendix B2), a demographic questionnaire for the reliable collection of selected data on the subjects, and a questionnaire on learners’ experience with the CING. These instruments were completed by the log-file data the CING database collects on all user sessions.
4.3 Empirical analysis: results

Since the research study was not a course requirement, we had to motivate the first-year English students to participate. Three weeks before conducting the research sessions, I along with two research assistants personally introduced potential participants in all relevant first-year courses to the research study, including its aim and relevance to the department (Appendix C2). We collected the names and e-mail addresses of all potential subjects, arranged for adequate computer pool space and set aside funds for the financial incentive (a 15€ reward for the five best post-test results). Subjects’ names and e-mail addresses were only used for the distribution of the incentives and the data analysis was conducted anonymously. We were able to confirm the participation of 55 participants out of a total of 120 students contacted.

In order to ensure participation and to avoid scheduling problems, all research sessions were conducted during obligatory “Applied Linguistics” seminars. The size of the prospective subject group (55 students) and the small number of computers available (max. 20 per room) meant that the group had to be divided into five smaller groups. Two research assistants guided each group through the entire session. The assistants reminded subjects that it was important to answer questions freely and in detail and that the privacy of all data would be protected. The assistants observed the learner group during the sessions, prevented them from cheating on the grammar test, and made notes on any learner questions or problems.

4.3.1 Subject group profile

The subject group was made up of 43 (78.2%) female and 12 (21.8%) male participants of whom the majority (49) was between 18 and 21 years old (76.4%) (Appendix A1). This subject group was fully homogeneous in the mother tongue variable with 55 (100%) speakers reporting German to be their first language (L1).

Grammar learning can be influenced by many things, including learners' previous knowledge. In the following I present the results of the profile questionnaire that relate this aspect of CING use. The items that were designed to receive information on learners' previous knowledge, learning experience (incl. schooling), CING usage, motivation and attitude

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44 See Appendix C1 for the instructions given to the research assistants.
45 I use the terms mother tongue and first language (L1) interchangeably here, as I did not investigate bilingual students, for whom first language could mean something different than mother tongue.
towards computers will be presented below. Subjects' navigation in the CING is a part of the subjects' profile investigation and will also presented in form of the analysis of the CING logfiles.

4.3.2.1 Results of the learner profile questionnaire

Learning a language today is not restricted to the school classroom, but often takes place in various contexts. To control for these potential contexts they were included in the profile questionnaire (Appendix D, Second Version).

**English as school-leaving exam, subject and length of English instruction at school**

English was a major subject in the school-leaving exam of 74.5% of all subjects (Appendix A1). Only for 11 subjects (20%) was English a minor subject, while 3 had school-leaving exams that did not include English and can thus be assumed to have had the least intensive instruction in the language. Given the age distribution of the group, the majority of learners can be assumed to have received their English instruction in the last two or three years, without a major gap between their school-leaving exams and our research session. All subjects received at least six years of English instruction, while 42 of them had received seven years of English instruction or more.

**Experience with English language exchange**

The questionnaires showed that despite an almost 50/50 split of learners who had participated in language exchange programs (31; 56.4%) in an English-speaking country and those who had not (24; 43.6%), most of those with exchange experience (19; 34.5%) had taken part in the shortest type of language exchange (one week to two months). While only ten subjects (18.9%) had experience with more extensive language exchange of six to twelve months (e.g., au-pair or work and travel programs), only two students (3.6%) had high school exchange experience (or comparable) of at least six months or longer.
Last English Language Exam and Exam Result

The subject group proved to be homogeneous in terms of their last English language exam, with 52 students (94.5%) having sat the CUT Placement Test only three months before the research session. The results of this test then formed the basis of the group’s English language skills and knowledge level assessment.

The majority of students (38 = 69.1%) had been assigned to ILC 2 after taking the Placement Test. Their skill level and knowledge of the English language could thus be expected to be at least intermediate. Only 17 subjects obviously had lower levels of knowledge, with seven of them (12.7%) attending the ILC 1 level and another ten (18.2%) attending the least advanced language course offered at the CUT, the Foundation Course.

Language Learning Background

Another variable for which the subject group proved overall homogeneity was past experiences with language instruction. Only three (5.5%) students stated that they had learned a language mainly without a teacher or outside of a school context with their own self-selected material. In addition, one student stated that he was mainly used to teacher-guided as well as autonomous learning.

Attitude towards Computers

Overall, the subjects appeared to have a positive attitude towards computers, with 37 students (67.3%) reporting that they liked or very much liked to work with computers. However, a considerable number of students (18 = 32.7%) stated that they only sometimes liked to work with computers. The very general nature of this question did not provide information on why subjects liked or only sometimes liked to work with computers.

Extrinsic and Intrinsic Motivation to learn English Grammar

A large majority of 52 students (94.6%) confirmed their extrinsic motivation to learn English grammar, as they considered it very important or important to succeed in their university grammar courses. Only three students considered this success to be partly
important, while none found it unimportant. This outcome is unsurprising given that these language courses are crucial to students’ academic career advancement.

The variable of intrinsic motivation produced comparable results, with a majority of 43 students (77.2%) considering it very important or important to use grammatically correct English with their native speaker (NS) friends. Eleven students regarded it as partly important and one subject saw no importance in speaking grammatically correct English with his NS friends. Overall, the subject group appeared to be both extrinsically and intrinsically motivated.

Learners’ Comprehension of the CING Topic Titles

In hypertext materials it is essential for users to comprehend the link (or node) titles as well as the content structure in order to be able to successfully navigate to material relevant to their task (see chapter 3). The CING title allocation task resulted in the following findings: subjects allocated the titles Use of Perfect (100%), Other Wh-Forms (98.2%), Change of Meaning (90.0%), Present Perfect 1 (98.2%), and For + Present Perfect (100%) almost without error. The titles Background and Foreground (85.5%), Conditional Structures (83.6%), and Perfect in Context (85.5%), however, posed some problems to the students. The most serious allocation difficulties learners had were with the titles Since: Problem! (60%), Speech Time and Reference Time (ST and RT) (69.1%), and For + Other Tenses (67.3%). Altogether, the majority of learners (78.2%) allocated between eight and ten titles correctly while a minority (21.8%) was unable to allocate more than seven correctly.

These findings led to the categorization of the CING titles as clear (allocated correctly by more than 80% of subjects) and ambiguous (allocated correctly by less than 80% of subjects).

Prior CING usage

The group proved to be homogeneously inexperienced with the CING prior to the research session. Only three students (5.5%) reported a one-time experience with the tool in contrast to 52 subjects (94.5%) who had never used the CING before. Overall, the subject group can be considered a CING novice group.
English language knowledge and computer experience

A negative relation was found between last English language exam and time spent on intro page \((r = -.250\) [Appendix M, Table 7]). The better subjects had performed on their last English language exam, the less time they spent on the program’s introductory page. This implies that an advanced language level can make learners more confident with a learning environment like the CING. The intro page contains information on the content types the CING offers and its correct usage which more advanced learners might not need as those with poorer English skills.

4.3.2.2 Results of the experience questionnaire items

Now I present the statistical values received from the experience questionnaire (Appendix E) on salience, metalanguage, autonomous learning, topic titles, vocabulary, and feedback.

The mean values (M) for all categories ranged between 2.15 and 2.95 and good standard deviation values (SD) of below 1 (.700 - .996), except for the feedback category (SD = 1.145) which was higher, but still acceptable (Appendix A7 for all results).

The summary of frequency statistics for each category (salience of material, metalanguage, autonomy, titles, vocabulary, and feedback) produced the following results. While 33 (60%) of all learners disagreed with the statements on salience of material, 20 subjects (36.4%) partly agreed and only two (3.6%) students fully agreed. An even stronger trend towards learner disagreement was reflected in the statements on metalanguage, with 38 (69.9%) learners disagreeing with the statements, twelve (27.3%) partly agreeing, and only two (3.6%) agreeing. The categories of autonomy and titles showed similar results, with 35 learners (63.6%) in disagreement with the statements on autonomy, 17 (30.9%) in partial agreement and only three (5.5%) in agreement. In the titles category, the majority of 34 students (61.8%) disagreed, 16 (29.1%) agreed partly, and only five (9.1%) agreed with the statements.

Vocabulary showed a weaker trend towards learners’ disagreement than the above categories. A bit more than half of the 55 subjects (56.4%) disagreed with the statements in this category, twelve learners (21.8%) partly agreed, and another twelve learners (21.8%) agreed. Nevertheless, the trend here was also towards disagreement. The only category that produced findings with a weak trend towards learner agreement was the category of feedback. While 21 (38.2%) learners disagreed with the statements, 17 (30.9%) partly agreed and the
same number of students (30.9%) agreed with the statements. It has to be noted that this is only a weak trend.

Chapter 5 will present further investigations into the reasons for these outcomes by means of a comparison of the results on the profile, CING experience of the learners and the interviews.

4.3.3 Results on the subject profile items

Learners’ moves and paths in the CING while they were preparing for the post-test were tracked with the help of an integrated log-file program (see chapter 2 for a description and Appendix A3 and Appendix L for the statistics).

The program recorded the time learners first accessed a page and when they left it, allowing for a calculation of how long they spent on each page (Appendix L). Unfortunately, this program malfunctioned while tracking this large group of subjects and produced only 45 log files rather than 55. This error neither occurred in December 2004 nor in June 2005 or two weeks prior to the research session when I administered several trial sessions to screen for problems. I thus had to adjust correlations with other research data to this reduced number of subjects.

Analysis categories made comparability of the CING performance data possible. These categories included subjects’ use of the introduction page (time spent on intro page), their use of relevant and irrelevant topic pages (number of relevant/irrelevant pages, time spent on relevant/irrelevant pages), the time they needed for navigating the tool (total navigation time), and the frequency with which (irrelevant or relevant) topic pages were visited (topic pages visited). The CING includes 14 topic pages on the simple past and present perfect, each with its own Explanation, Discovery, and Exercise page. In the log-file analysis (Appendix L, Tables 1-9), each topic page was counted that had been visited for 30 seconds or longer (regardless of whether the subject spent time on the Explanation, Discovery or Exercise pages). If the same topic page was visited twice, it was counted only once and the different time periods spent on it were added together.

Time Spent on Intro page

Learners spent between 4 and 484 seconds on the intro page (Appendix L, Tables 1a and b). We considered less than 30 seconds to be an insufficient amount of time to absorb
information on any given page. This left 43 learners who spent between 30 seconds and three minutes on the program’s introductory page (see Appendix L). At the other end of the spectrum, learners who spent longer than a total of three minutes (185 seconds) on the page could be expected to have read the page or searched it much more thoroughly than the others. The log-file program tracked a total of 13 learners who spent between 186 and 484 seconds on the introductory page.

Number of Relevant Pages visited and Time Spent on Relevant Pages

The subjects visited between 0 and 13 relevant pages (Appendix L, Table 2) with 16 learners (35.5%) only visiting between 3 and 5 while another 29 learners (64.4%) visited between 6 and 13 relevant pages. Considering that learners had 40 minutes to work in the tool, three to five relevant pages visited indicated difficulties in the selection of relevant pages. This also means that at least one third of the subject group was not able to find and appropriately use relevant CING pages and shows that CING page usability does not exist for all learners.

Subjects spent between zero and a total of 2,286 seconds on relevant CING pages (Appendix L, Table 3). A correlation of the variables number of relevant pages visited and time spent on relevant pages showed a correlation coefficient of \( r = .558 \), suggesting that there is a positive linear relation between the number of relevant pages visited and the time spent on those pages. It can thus be assumed that the majority of learners read the relevant pages they visited.

Time Spent on Irrelevant Pages and Number of Irrelevant Pages visited

Subjects visited between 0 and 13 irrelevant pages (Appendix L, Table 5) and spent between 0 and 1,985 seconds on those pages (Appendix L, Table 6). While 20 subjects (44.4%) visited none or only one irrelevant page during their CING work, two subjects accessed 13 different irrelevant pages. Despite the extreme results for these two learners, the majority of subjects (77.8%) visited between zero and three irrelevant pages. Here too there is a convincing linear relation between both variables, which have a correlation coefficient of \( r \)

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46 Zero seconds refers to one learner who failed to visit any relevant page during his time in the CING. The learner who spent 2,286 seconds (38 minutes) on relevant pages only spent approximately two minutes on navigation or visiting the intro page and irrelevant pages.
= .616 for the number of irrelevant pages visited and time spent. The more irrelevant pages users visited, the more time they spent on them.

**Topic pages visited**

While it gathered information on learners’ comprehension of CING topic titles, the learner profile questionnaire did not investigate learners’ application of this knowledge in CING work. By analyzing which topic pages learners actually visited and included in their CING work (i.e., consciously read for longer than 30 seconds), I hoped to find a relation to learners’ topic title comprehension. The results can be roughly divided into three groups (Appendix L, Tables 9-23):

8. Pages visited by the majority of subjects: Use of Perfect: (77.3%), Present Perfect 1: (72.7%), Present Perfect 2 (63.6%)
9. Pages visited by around 50% of subjects: Present Perfect 3 (50%), Simple Past: (47.7%), Perfect: Yes or No? (45.5%), Do Not Use the Perfect (45.5%)
10. Pages that the least number of subjects visited: Since + Present Perfect (38.6%), Perfect in Context (34.1%), Since: Problem! (29.5%), Speech Time and Reference Time (22.7%), For + other Tenses (15.9%)

The results show a fair distribution of page use by the subject group while all pages in group 1) were used by most subjects and those in group 3 were used by the fewest subjects. Why this is will be further investigated and discussed in chapter 5 with the help of correlations and title investigation.

In a next step, correlations between learners’ CING behavior and the learner profile data were established in order to further clarify why learners used certain pages less frequently than others.

**4.4 Qualitative analysis: learner problems**

Due to the quantification of data and rigorous methods of data collection, quantitative research approaches give rise to “reliable and internally valid data” while being “open to the criticism of giving narrow, unrealistic information using measures that trap only a tiny portion of the concept originally under study” (Coolican, 2006, p. 48). While the aim of my
quantitative research approach (theory-driven with a large subject sample [>50]) was to reliably prove or disprove the set of research assumptions on learners’ experiences with and usage of the CING, some of my questions were left unanswered (e.g., infrequent use of the Simple Past page, hypertext usage/issus, problems with the CING feedback).

In contrast to quantitative research, qualitative investigations are conducted with less control but “in more natural, everyday circumstances”; they also give “richer results and more realistic information” (Coolican, 2006, p. 48). In the course of data analysis, qualitative data “are left in their original form of meaning” (Coolican, 2006, p. 25), which is why advocates consider such data to be “more valid in terms of their reflection of reality and less distorted by the requirements of operationalisation and hard scientific measurement” (Coolican, 2006, p. 49).

With these considerations in mind I supplemented my quantitative research with semi-structured individual interviews with open-ended questions. They were administered with a small group of subjects from the subject pool that participated in the quantitative research sessions in December 2005. The interviews took place a few months after these sessions and helped to “gather an authentic understanding of people’s experiences” (Silverman, 2006, p. 20) with the CING.

These interviews made it possible to maximize the range of investigated topics and enable interviewees to reveal aspects that I had not anticipated in the study design (see Flick, von Kardoff, & Steinke, 2000, p. 354). This qualitative approach allowed me to collect authentic learner information (e.g., their experiences, their opinions, and their reasons for their navigation/behavior) on the particular actions represented in my theoretical model.

In the following I describe how the interviews were prepared in order to ensure the highest possible reliability of results. I begin with the theoretical background to and the development of the interview questionnaire, followed by a description of the interview session structure and the sample group. Next I provide a detailed account of the interview data analysis and, finally, present the results.

4.4.1 Interview questionnaire background

Interviews form an integral part of a large number of published qualitative research projects. The advantages of this method of data collection are that it is economical of time and resources, and that it enables researchers to capture what happens in the real world situations they are investigating (see Silverman, 2006). Interview sessions should create “circumstances
in which the interviewees can express themselves fully and can uniquely define their world” (Coolican, 2006, p. 145), which in this context is their work in the CING.

In order to reflect the reality of learning with the CING in the questionnaires I analyzed the results of my studies with the CING (Heller 2004a and 2004b) in view of reasons for learner problems with material and page selection in the CING. From this I developed a combined theoretical model of autonomous learning and information specification (see chapter 3, “Theories of autonomous learning” section) based on Ziegler et al. (2003) and Schnott & Zink (1997). This model provided a set of characteristics of efficient CING navigation, which could be operationalized in the interview questionnaire. Findings from the empirical study for which there was no evident explanation were also integrated into the questionnaire.

To be able to see what learners actually did in the CING, we observed learners in the interview sessions using the CING for a similar learning task as in the main research sessions. This was done via camera and researcher observation before the interview began.

For the interview data analysis I followed the procedure of a qualitative content analysis as described by Gläser & Laudel (2004) and used Mayring’s model of “qualitative content analysis” (Mayring, 2003) to ensure the reliable and valid data assessment essential to good research (see Coolican, 2006, p. 33). In the following I give a brief outline of how Mayring’s model impacted the development of the questionnaire.

4.4.1.1 Relevance and comprehensibility of interview items

The interview questionnaire needed to reflect the underlying research theory and help to investigate areas where the quantitative data had failed to produce clear results. The quality criterion of *intercoder reliability* (Mayring, 2000) was applied in order to arrive at a reliable application of meaning categories on the collected qualitative information.

A psychologist and the two research assistants who participated in the quantitative data collection sessions assisted me in the development of the questionnaire. We began with the following two steps (adapted from Bortz & Döring, 2006):

1) Introduction of the team to information specification and autonomous learning

The introduction included a summary of the theories of autonomous learning and information specification, including the set of actions both theories advocate as crucial to efficient autonomous learning and hypertext navigation (see Figure 26 and 27). I also
introduced the quantitative study findings to the team, excluding one of the two assistants so that he could participate in a test session on the applicability of the allocated time frame for the interview and the task.

2) Development of the interview session introduction, interview questions (see Appendix 5), and interview structure

Using examples from the (final) questionnaire, I will briefly show how the quality criteria were applied in the development of these aspects.

- **Scope.** The interview sessions were designed to leave sufficient time for interviewees to react to the stimulus situation (CING work). This includes anticipated and non-anticipated reactions. (see Merton, Fiske & Kendall, 1956). Questions such as 4/4, 4/5, 4/6, and 4/7 (see Appendix G) all address different aspects of the stimulus situation. It was important that the subjects were given the opportunity to describe as many of them as possible.

- **Specificity.** Topics and questions should be clearly formulated in the interview in order to elicit specific rather than general information (Merton et al., 1956). Question 4/5c: *Welche Themenseiten haben Dir am besten bei der Aufgabenbearbeitung geholfen? Warum?* (What topic pages were most helpful to you in working on the given task? Why?). In case a learner misunderstands the term *Themenseite* we included a question on the actual topics to confirm the subjects’ comprehension. The combination of pre-set and spontaneous questions helped increase specificity.

- **Depth.** Learners should be supported in their presentation of the affective, cognitive, and value-related meaning arising from certain situations in the form of, e.g., additional questions (see Merton et al., 1956). The questions that focus on learners’ difficulties with parts of the CING, such as the page titles (question 4/9) encourage learners to present, e.g., the affective meaning of the situation. For this question, learners were provided with a Likert scale that assisted them in verbalizing their difficulties.

Other questions on this issue of topic titles were posed earlier in the interview, such as question 4/8a (*Kannst Du mir Seiten in der CING zeigen, die nicht relevant für deine Aufgabe sind, oder auf die du gestoßen bist und dann realisiert hast, dass sie nicht relevant sind?* [Can you show me pages in the CING that were not relevant to your task or that you came across...?])
and then realized were irrelevant?). This gave learners several possibilities of commenting on the meaning this particular situation in the CING had for them.

- **Personal context.** It is important to capture the personal atmosphere between interviewer and interviewee. This information is especially important for the interpretation of non-anticipated reactions on the interview topics (Merton et al., 1956). The DV tape of all interview sessions enabled us to go back to the interview and examine the personal atmosphere between interviewer and interviewee and integrate any sign of a negative/positive atmosphere and related aspects of the interview into the final data analysis.

Questions were amended in those cases where our models or Merton’s criteria (Merton et al. 1956) had not been integrated satisfactorily. We also included potential answer categories in the questionnaire in order to ease note taking during the interview session.

3) Test session with research assistant

A comprehension test was administered with the research assistant familiar with the theory and research. In this test, the assistant looked for terms and structures in the questions that might be incomprehensible to learners. We discussed the results as a team and made adjustments where necessary. Next we discussed the sequence of questions, making sure that the questions on learners’ CING behavior focused on particular actions in their CING work (e.g., question 4/4a: First action in the CING; question 4/5a: First page visited in the CING).

Next we conducted a test session with the assistant who had neither received an introduction to the CING nor to the research project or the theories underlying the questionnaire. This session was set up in the same way our research interviews with the subject group would be, and aimed at determining whether an hour was enough time to complete the set of tasks (CING work, TECOWI [Naumann & Richter, 2001]) and the interview. Another aim was to test the interview questionnaire’s overall comprehensibility. Following the session, we discussed the results as a team, amended questions where necessary, and made final decisions on the position of the camera, the observer, the interviewer, and the learner in the interview room.

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47 TECOWI is a questionnaire that measures procedural computer knowledge and provides a clear distinction between beginners and advanced Internet user groups (see Naumann and Richter, 2001, p. 293-300).
4.4.1.2 Assumptions underlying the qualitative study

As outlined in chapter 3.4, successful usage of the CING is likely to depend on learners’ application of steps that are reflected in the models of information specification and autonomous learning. In the following, I discuss how these two models were integrated into the interview sessions.

Information Specification

Schnotz and Zink (1997) investigated knowledge acquisition with hypertext and linear text with and without a predefined learning task. Their theory of knowledge acquisition is called information specification and clearly outlines a set of actions and knowledge items that are important for successful knowledge acquisition, independent of the type of text involved. In the case of the CING, they can be described as follows (adapted from Schnotz & Zink, 1997, p. 97):

1) Adequate specification of information
2) Number of information goals pursued
3) Degree of specification
4) Information search
5) Understanding the topological structure of the CING
6) Knowledge about how to move within this structure
7) Assessment of found information

   Evaluation of found information for relevance to the learning goal

Theory of Information Specification operationalized in observation categories

We translated the information specification actions into the following categories and questions for our purposes:

1) Adequate specification of the information (learning) goal
   - Page usage: relevant or irrelevant pages
   - Which relevant pages?
   - Do they match the learners’ grammar knowledge gap?
     - Pages for both of the grammar topics (present perfect/simple past) or only for one?
2) Information search
- Use of navigational tools in the CING
- Navigational path through the CING

3) Assessment of found information
- Page usage: relevant or irrelevant
- Page usage: how long does it take to leave an irrelevant/relevant page?

This operationalization made it possible to collect information on processes that learners would not normally verbalize (e.g., specification of information goal) during their CING work. Thus determining the number of relevant and irrelevant pages learners visited and whether these relate to their stated learning gap can provide information on the “number of information goals pursued.” Learners’ “degree of specification” of their learning goal was observed by investigating the visited pages and relating them to the learners’ stated grammar knowledge gap.

We also observed the navigational paths learners followed in the CING in order to collect information on their understanding of the program’s topological structure (Schnotz & Zink, 1997) as well as on the strategies they used for finding information.

Finally, we investigated how many relevant/irrelevant pages learners visited and how long it took them to leave them. Considerable time spent on irrelevant pages is a clear indication of difficulties in correctly evaluating the relevance of given information for the task at hand.

**Theory of Information Specification operationalized in interview questions**

The following categories (see also Appendix G2) are based on the model of information specification (see Figure 26) and were established to collect information on particular learning goals and the reasons for learners’ use of specific pages and navigational tools.

**Degree of Specification**

1. Question 4/3a): Erkläre mir nochmals in Deinen eigenen Worten, was Deine Aufgabe in der CING war. Was solltest Du tun? (Please explain in your own words what your task in the CING was. What were you supposed to do?)
2. Question 4/4a): *Kannst Du Dich erinnern und mir genau erklären, was Du in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen?* (Can you remember and explain to me in detail what you did first in the CING today to complete the task I gave you?)

3. Question 4/4b) follows up on the answer to question 4a: *Gab es Probleme dabei?* (Did you experience any problems performing this first step?)

It is crucial for learners to understand the goal of the task that they were given in order to be able to identify relevant actions and materials. Question 4/3a was intended to make learners verbalize this understanding. Questions 4/4a and b aimed at determining whether learners’ first steps in the CING show a form of specification of either information or learning activity. Question 4b was included to find out whether the CING contains obstacles that hinder the application of actions or use of material specified by learners.

**Clear Idea of Existing Knowledge Gaps**

6) Question 3/7: *Zeige mir mit Hilfe dieser Skala, wie gut Deiner Meinung nach Dein Wissen über das Simple Past und Present Perfekt (die Anwendung und Regeln) ist.* (Please show me on this scale how good you think your knowledge of the simple past/present perfect is (in terms of usage as well as rules).

7) Question 3/8: *In welchen Bereichen des Simple Past und Present Perfect denkst Du, dass Du noch etwas mehr Übung brauchst?* (In what areas of the simple past and present perfect do you think you need more practice?)

Questions 3/7 (based on a 5-point Likert scale) and 3/8 were developed in order to investigate our subjects’ awareness of their own knowledge gaps in relation to their task. As described by Schnotz and Zink (1997), the specification of information goals when solving a task can become more efficient if learners are aware of the knowledge gaps they have in the subject area and integrate this knowledge into their information search (and usage) process.

**First Navigation Moves and Comprehension of CING Topic Titles (CING Page Nodes)**

1) Question 4/5a: *Zeige mir die Seite, die Du als erstes in der CING besucht und gelesen hast.*

(Please show me the page that you first visited and read in the CING.)

If subjects named the menu or the intro page) they were prompted with:
2) Question 4/5b: …und welche Themenseite? (… and what content page?)

3) Question 4/8a: Kannst Du mir Seiten in der CING zeigen, die nicht relevant für Deine Aufgabe waren, die Du aber zuerst für relevant gehalten hast? (Can you show me pages in the CING that were not relevant to your task, but that you originally thought were relevant?)

If learners named such pages:

4) Question 4/8b: Warum sahen sie für Dich relevant aus? (Why did they seem relevant to you?)

5) Question 4/9: Zeige mir auf dieser Skala, wie schwierig es für Dich war, relevante Seiten in der CING zu erkennen. (Please show me on this scale how difficult it was for you to identify relevant pages in the CING.)

Questions 4/5a and b were aimed at understanding whether learners’ comprehension difficulties uncovered in the quantitative analysis were mirrored in their page use. The type and content of the first page learners visited provides information on task realization, the integration of knowledge gaps, and the need for more support on how to use the CING. Questions 4/8a and b explore how well learners can identify relevant pages and navigate to them.

Learners were also asked about the degree of difficulty they experienced in recognizing and finding (relevant) pages (question 4/9). This question was included in order to elicit a statement on learners’ page selection experience for their entire CING session.

**Use of Navigational Tools**

1) Question 4/11a: Kannst Du mir erklären, wie Du am besten von der Startseite zu den Themenseiten navigierst? (Can you explain to me how to best navigate from the intro page to the topic pages?)

2) Question 4/11b: Und wie navigierst Du am besten von Themenseite zu Themenseite? (And what is the best way to navigate from topic page to topic page?)

Navigation in the CING can take place by following the CING structure beginning with the intro page, skipping levels in the CING structure, or by circumnavigating it entirely (such as by using the Sitemap [Figure 8] and directly clicking on a page deep within the CING
structure). Although learners’ behavior in the CING must not be inefficient per se if their navigation only happens outside the CING structure, this type of navigation hints at potential problems with the CING titles or content structure. Question 4/11a aimed at determining which navigation paths learners followed successfully and which they preferred. We asked subjects to explain these paths as if they were introducing the CING to a learner new to the tool.

**Selected Material Relevance (for learning task)**

- Question 4/5c: *Woran erkennst Du, dass diese Seite relevant für Deine Testvorbereitung ist?* (How can you tell whether this page is relevant for preparing for your test?)
- Question 4/8a (See above)
- Question 4/8b (See above)
- Question 4/6a: *Welche Themenseiten haben Dir am besten bei der Vorbereitung auf die Aufgabe geholfen?* (Which topic pages were most helpful to you as you prepared for the test?)
- Question 4/6b: *Welche Art von Material war für Dich am hilfreichsten? Warum?* (What type of material was most helpful to you? Why?)

The ability to understand the task and navigate efficiently in the CING material structure is of little use if learners are unable to assess the relevance of the material they find. Question 4/5c was meant to investigate learners’ strategies for assessing the relevance of material, while questions 4/8a and b were intended to collect information on learners’ ability to recognize relevant and irrelevant pages in the CING. Questions 4/6a and b address learners’ ability to assess the material’s relevance for their own learning strategies.

**Autonomous Learning**

The quantitative data analysis (see “Empirical analysis” section) showed that the subject group had only little or no experience with autonomous language learning and that the majority of subjects was used to teacher-guided language instruction. In order to investigate which strategies of autonomous learning our subjects were able to apply despite their lack of experience, I created a model of autonomous learning in the CING, adapted from a model by
Ziegler et al. (2003) and other researchers in the field (Holec, 1981; Boekarts, Pintrich, & Zeitner, 2000; Benson, 2001) (see Figure 28).

This combined model of actions in autonomous learning (based on Ziegler et al. 2003, Holec, 1981; Boekarts, Pintrich & Zeitner, 2000; Benson, 2001) includes the following steps:

− Understanding of the task and setting learning goals accordingly (task realization)
− Selection of relevant materials
− Learning strategy selection and application
− Monitoring success of learning strategy application
− Adjustment of strategies if necessary
− Evaluation of the entire approach with the help of feedback

Given the similarities between autonomous learning (AL) and information specification (IS) (see chapter 3, “Theories of learning with hypertext” and “Theories of autonomous learning”) (see Figure 28), all interview questions regarding information specification discussed above also apply to autonomous learning. Despite this overlap, each theory provides a different degree of detail on the actions in question. While IS only generally specifies the processes involved in the action of learning (“semantic processing of information”), the methodology of AL includes as many as three actions to specify learning processes. On the other hand, the action of “selection of relevant information” (AL) involves two actions (“information search” and “assessment of found information”) in IS.

In addition, I developed four questions to operationalize the three AL actions of “selection and application of relevant learning strategies,” “assessment of learning strategies (if necessary: adaptation of strategies),” and “assessment of success of learning strategies and learning approach” (Figure 28).
Figure 28: The overlap between information specification and autonomous learning
Theory of autonomous learning operationalized in interview questions

Learners’ existing learning strategies

Question 4/3b: Welche Lernaktivitäten helfen Dir normalerweise (ohne CING) bei der Lösung einer solchen Aufgabe? (What learning activities usually [without the CING] help you solve a task like this?)

This question aimed at determining whether the CING supports or hinders learning strategies hypertext novices bring to a web-based, autonomous learning tool.

Learning Strategy Application

1) Question 4/7: Was hast du auf den ausgewählten Seiten getan für deine Testvorbereitung? (What did you do on the pages you selected in order to prepare for the test?)

The learner log files on CING behavior (see “Background to evaluation” section) provided no information on users’ learning behavior on the content pages they visited. Question 4/7 fills this gap by investigating what learners actually did in the CING to improve their knowledge of the simple past and present perfect.

Assessment of learning strategy and learning approach: Problem-solving strategies

- Questions 4/10a and b: Bereitete Dir die CING Probleme während deiner Aufgabenbearbeitung bzw. Testvorbereitung? Welcher Art? (Did the CING cause you any problems during your task work/ test preparation? What kind of problems?)
- Question 4/10c: Konntest du diese Probleme lösen? (Were you able to solve these problems?)

As the CING does not provide support if difficulties in learning with the tool arise, users’ own problem-solving strategies are a vital part of a successful learning experience with the CING. Question 4/10a focuses on learners’ CING problems; question 4/10b on their abilities to solve these problems.
Clarification of quantitative study results

The following interview questions were intended to clarify inconclusive results from the quantitative data analysis.

Prior experience with the CING

Question 4/1: Du hast schon ein bisschen Erfahrung mit der CING: War die heutige Arbeit mit dem Programm einfacher für Dich als im Dezember 2005? (You already have some experience with the CING. Was working with the program today easier for you than it was in December 2005?)

This question directly relates to my seventh research assumption (see chapter 3, “Theoretical aspects of second language acquisition”): Learning with hypertext differs considerably from traditional learning. Goal-oriented navigation and orientation in the hypertext structure can require prior experience with hypertext material. Now that learners had used the CING at least once in the first research session in December 2005, question 4/1 could inquire into whether their experience with the CING had been conducive to their work during the second session.

Subjects’ problems with autonomous learning in the CING

Question 4/2: Du musstest die CING heute und auch im Dezember ohne Lehrer oder Instruktur nutzen. Bereitet Dir das Probleme? (Today and in December you had to use the CING without a teacher or instructor. Did this cause any problems for you?)

This question directly relates to my eighth research assumption: Autonomous learning strategies help learners to define learning goals, select relevant learning materials, and apply appropriate learning steps and strategies for their task. Question 4/2 was included to collect learners’ statements regarding difficulties the quantitative data indicated they encountered while working autonomously in the CING.

Learner usage of the simple past content pages

Question 3/7b: In welchen Bereichen des SP/PP denkst du, dass Du noch etwas mehr Übung brauchst? (In what aspects of the simple past and present perfect do you think you need more practice?)
Question 3/4a: Aus deiner Erinnerung an die Forschungssitzung im Dezember letzten Jahres, was war für Dich das schwierigste in der Sitzung? (What do you remember being most difficult about the research session in December of last year?)

Questions 4/4a and b: Kannst Du Dich erinnern und mir genau erklären, was Du in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? (Can you remember and explain to me in detail what you did first in the CING today to complete the task I gave you?); Gab es Probleme dabei? (Did you experience any problems performing this first step?)

Questions 4/5a and b: Zeige mir die Seite, die Du als erstes in der CING besucht und gelesen hast! Welche Themenseite hast Du zu allererst besucht? Warum? (Please show me the page that you first visited and read in the CING. What content page did you first visit? Why?)

Question 4/8a and b: Kannst Du mir Seiten in der CING zeigen, die nicht relevant für Deine Aufgabe waren, die Du aber zuerst für relevant gehalten hast? (Can you show me pages in the CING that were not relevant to your task, but that you originally thought were irrelevant?); Warum sahen sie für dich relevant aus? (Why did they seem relevant to you?)

Questions 4/10a and b: Bereitete Dir die CING Probleme während deiner Aufgabenbearbeitung bzw. Testvorbereitung? Welcher Art? (Did the CING cause you any problems during your task work/ test preparation? What kind of problems?)

Question 4/11c: Gab es Probleme beim Navigieren in der CING? Welche? (Did you have problems navigating in the CING? What kinds of problems?)

Question 4/12: Welche zusätzlichen Informationen in der CING hättest Du Dir für die erste Arbeit (Dez05) mit der CING gewünscht, damit diese Dir leichter gefallen wären? (What additional information did you wish the CING had provided that would have made it easier to work with the first time [in December 2005]?)

Question 4/13: Gibt es etwas, das Dir in dieser Sitzung an der CING aufgefallen ist, du aber noch nicht erwähnt hast? (auch wenn es Dir noch so unwichtig erscheint) (Is there anything that you noticed about the CING in this session that you have not yet mentioned, no matter how unimportant?)

The observational data on learners’ behavior in the CING (December 2005) showed that many avoided all content pages on the simple past. Questions 3/7b and 4/5a and b were included to find out why this was so. Questions 4/5a and b were meant to help me understand
what influenced learners’ first steps in their material search in the CING. I expected the reasons for learners’ page selection to be manifold, ranging from their awareness of grammar knowledge gaps (questions 3/7 and 8), to the content page’s position within the content structure/index (questions 4/8a and b), to learners’ experience with the CING (questions 3/4, 4/10a and b, 4/12, and 4/13), their path in the tool (questions 4/4b and 4/11c), as well as their recognition of relevant content page titles (question 4/8b). Question 4/11c was also intended to lead to a better understanding of the impact of CING titles on learners’ CING behavior.

_Reasons for negative experiences with CING Feedback_

Question 4/2: _Du musstest die CING heute und auch im Dezember ohne Lehrer oder Instruktor nutzen. Bereitete Dir das Probleme?_ (Today and in December you had to use the CING without a teacher or instructor. Did this cause any problems for you?)

Questions 4/10a and b: _Bereitete Dir die CING Probleme während deiner Aufgabenbearbeitung/ bzw. Testvorbereitung? Welcher Art?_ (Did the CING cause you any problems during your task work/ test preparation? What kind of problems?)

The quantitative data analysis on learners’ experience with the CING showed that about a third of all learners had problems with the CING feedback function. Questions 4/2 and 4/10a and b as well as the observation data in the interview session were intended to help provide an explanation for this finding. Instead of asking learners specifically about their problems with the feedback, we posed two general questions on learners’ problems with the CING. If the feedback had been a serious problem for learners, we expected this to come up in their responses to these general questions. The general nature of the questions also gave us the opportunity to pose more focused additional questions to clarify learner answers, such as regarding the negative relation the quantitative data revealed between learners’ CING feedback experience and their CING title comprehension.

_Reasons for problems with the CING material’s salience_

Questions 4/10a and b: _Bereitete Dir die CING Probleme während deiner Aufgabenbearbeitung bzw. Testvorbereitung? Welcher Art?_ (Did the CING cause you any problems during your task work/ test preparation? What kind of problems?)

Question 4/12: _Welche zusätzlichen Informationen in der CING hättest Du Dir für die erste Arbeit (Dez05) mit der CING gewünscht, damit diese Dir leichter gefallen wären?_ (What additional information did you wish the CING had provided that would
have made it easier to work with the first time [in December 2005]? Question 4/13: *Gibt es etwas, das Dir in dieser Sitzung an der CING aufgefallen ist, du aber noch nicht erwähnt hast? (Auch, wenn es Dir noch so unwichtig erscheint.)* [Is there anything that you noticed about the CING in this session that you have not yet mentioned, no matter how unimportant?].

The quantitative data analysis indicated that learners found the CING material to not always be salient. We decided against asking learners directly about “salience”, as the term and concept itself might not be understandable to them. Instead, the general questions (4/10a and b, 4/12 and 4/13) on material comprehension provided information on this issue. Again, if a learner’s answers to these general questions indicated problems with the CING’s material salience, this implied the seriousness of the issue to the learner.

*General Interview Questions – General Learner CING Experience*

The general questions (such as questions 3/4a, 4/4b, 4/8b, 4/10a and b, 4/11c, 4/12, and 4/13) could apply both to the research hypotheses as well as to the learners’ general CING problems.

*Users’ Internet expertise*

As described above in the “Evaluation instruments” section, the investigation of learners’ usage habits with the Internet failed to provide conclusive results. In order to determine whether not only hypertext experience, but also general Internet expertise was required to use the CING successfully, I included the TECOWI questionnaire in the study (Naumann & Richter, 2001; see also Appendix F). According to the designers, this questionnaire measures “procedural (practical) computer knowledge” (translated by the author, Naumann & Richter, 2001, p. 293) and allows for “a satisfactory distinction between Internet novices and experts” (translated by the author, Naumann & Richter, 2001, p. 300). The questionnaire was originally developed for students in the humanities, making it suitable for this study’s subjects.

*Additional questions in the interview questionnaire*

As noted above, the interview items were introduced in the same sequence in every interview session, and thus constituted a kind of interview guideline. This sequence could be expanded upon with additional questions during the interview session as soon as responses were unclear or unsatisfactory in relation to the study’s aims. I conducted the interviews,
which were monitored by a researcher familiar with the project. An interviewer less familiar with the study’s objectives would not have been able to achieve an appropriate level of detail in the discussion with the subjects.

Type of questions

With the goal of eliciting “richer” and “fuller information” (Coolican, 2006, p. 171), all questions except 3/1, 3/7a, and 4/9 (Appendix G1) were open-ended questions. We hoped to create an unrestrained conversational environment that encourages the least ambiguous answers and enables students to say “what they think” instead of merely assenting to or disagreeing with presented statements (see Coolican, 2006). The open and general nature of the questions also made it possible to uncover information unanticipated within the study’s theoretical foundations laid out in chapters 2 and 3.

4.4.2 Interview sessions

The subject group for the interview sessions was made up of five strong and five weak CING users, based on the log files of the first study. A “strong” user was defined as having visited between eight and twelve relevant content pages and less then three irrelevant content pages with a usage time of less then 300 seconds in total for irrelevant pages.48 A strong user’s navigation time was not to exceed 236 seconds or had to range between 8 and 40 steps. “Weak” users were defined as having visited no more than 13 content pages relevant to the learning task, with no more than 975 seconds spent on these pages. Inefficient navigation was defined as ranging between 400 and 1,154 seconds.

Interview Session Structure and Organization

The interview sessions were conducted in the first week of April 2005 and set up as follows: All interviews took place in a departmental office where there was a computer, a DV camera for taping the session, and a second desk next to the one with the computer. The camera was positioned far behind the learner and focused only on the computer screen so that the subjects would not feel like they were “being monitored”.49 Learners sat at one desk with

48 A visit was defined as at least 30 seconds at a time spent on a page.
49 We adapted our set-up from Rubin (1994, p. 52).
the researcher positioned behind them on the left so that they could be as “undisturbed” in their work as possible, and yet close enough for the researcher to observe their CING behavior.

We aimed at creating a comfortable conversation atmosphere, in which subjects were encouraged to ask questions before, during, and after the interview and were also given a detailed introduction to the structure of the session and the question topics the session would include. The following interview principles were adapted from Haller (1991) (as cited in Gläser & Laudel, 2004) and also (in part) communicated to the interviewees:

- Culturally established rules of communication are held to in the interviews, the most important of which is that the interviewee can decline answering a question without being sanctioned.
- The roles of the interviewer and the interviewee are clearly defined and respected by both parties.
- The interviewer leads the conversation, which is focused on a particular goal.

At the beginning of the interview, all interviewees were read an introduction (Appendix G1) reminding them that they were welcome to voice any questions or doubts about the research study or the interview. After this introduction, subjects took the grammar test (the same test as in December 2005). Next, subjects were asked about their experience with the CING and their assessment of their own abilities in the two grammar topics. We taped the session from this step onwards. Then subjects were given 15 minutes in the CING to prepare for a grammar test similar to the one in December 2004.\(^{50}\) We expected that the subjects’ experience in December 2005 would enable them to use the CING more efficiently, thus making up for the shorter time period they were given in this session.

After the CING work, we conducted the interviews using the pre-set questions. Each interview began with a brief introduction reminding learners to answer honestly and to freely ask any questions they might have. The CING was left running in the background so that learners could show the interviewer what they had done in the CING rather than having

\(^{50}\) Just as in December 2005, the subjects were told: Bereite Dich jetzt mit der CING auf einen Grammatiktest (ähnlich wie der vorherige) zur korrekten Anwendung des Simple Past und des Present Perfect vor. Du hast 15 min Zeit für die Vorbereitung. (Spend the next 15 minutes in the CING preparing for a grammar test on the correct application of the simple past and the present perfect.)
to explain their actions. This provided us with more specific information on particular aspects of the subjects’ CING experience.

At the end of the session, subjects were asked if they had any further questions and their questions were answered. They were then reimbursed 20 Euros for their participation and the session was concluded.

4.4.3 Procedure of interview content analysis

Gläser and Laudel’s (2004, p. 193ff) model of qualitative content analysis guided my analysis of the interview results. This model is a system of analysis “that quickly and consistently leaves behind the original text in order to systematically reduce the amount of information and to structure it according to the research aim” (translated by the author, Gläser & Laudel, 2004, p. 194). They use a theory-guided category system, such as our model on hypertext and autonomous learning in the CING (see chapter 3, “Theories of autonomous learning” section).

Guided by this approach, I related the underlying theory to the interview and observation data when constructing the meaning categories, which thus both represent the research assumptions as well as the individual data subjects provided. This systematic approach to content analysis guarantees equal treatment of all information (Mayring, 2003, p. 198) during processing and analysis. All material (in this case: transcript material) is treated equally and there is no focus on what one researcher considers “relevant” information, as we analyzed the information as a team. We followed Gläser and Laudel’s (2004) four steps of analysis (see Figure 29): preparation of the extraction, extraction, processing, and evaluation.

4.4.3.1 Extraction of information

We verified our variable definitions (Gläser & Laudel, 2004, p. 201) through empirical identification of subjects’ actions in the CING in a way that reflected our theoretical model and enabled the theoretical and empirical distinction of phenomena (Gläser & Laudel, 2004, p. 201-2). For the variable level of information specification, for example, we drew up a list of aspects that were directly related to this factor (i.e., learners’ first step in the CING and their strategies for selecting relevant pages), investigated learners’ CING behavior from recorded data related to these aspects, and added the results to the analysis of data. For the investigation we used a list of pre-designed meaning categories (Appendix C4).

Note that some of our questions served more than one purpose, as some of the theoretical aspects intersect with each other (see Figure 28). Furthermore, we are aware that
the theoretical background represented in the questions does not guarantee that subjects’ responses focused specifically on these aspects. A final caveat is that the fact that subjects’ knew they were going to be asked about their CING work might have led to different behavior and strategies than in another context, and/or induced different ways of recounting experiences with the tool (see Van Someren, Barnard & Sandberg, 1994).

Extraction took place after all interview sessions had been conducted and all transcripts had been completed. Each answer was identified with one of the pre-set categories or a new category if the information did not match any of the existing ones. The extracted information was entered into a temporary extraction table (see Appendix C3), which was enhanced and altered (e.g. Appendix C4) after all transcript information had been extracted. The extraction table was based on the model of qualitative content analysis (see Figure 29; adapted from Gläser & Laudel, 2004, p. 197) and ensured “a minimum of agreement between researchers so that similar information is associated with the same variables” (translated by the author, Gläser & Laudel, 2004, p. 204) and hence intercoder reliability. The extraction was simplified by the interview questions, which produced focused answers that allowed us to extract information in the form of meaningful sentences or phrases.
The team (me, Researcher A and Researcher B) agreed on the following set of general information analysis indicators in order to ensure all relevant information was captured in the information extraction. We followed the analysis indicators and included eight extraction rules (loosely adapted from Gläser & Laudel, 2004):

Rule 1) Before extracting, read the entire interview transcript.

Rule 2) Extract the information (as set by indicators) and allocate it to the relevant questions/meaning categories (variables).
Rule 3) If possible, extract the smallest meaningful phrase that fits question/variable in part/fully, in form of a direct quote (otherwise make a note of where the reference occurred).

Example: Original transcript information
(Answer to Question 4/1): “Ja” (Yes), (und woran lag das? [why?]) “wie ich schon vorhin gesagt hab, jetzt durch die Übung auch während des Semesters” (like I said before, because of the practice I had just now and also during the semester) (Übungen in der englischen Grammatik oder mit der InternetGrammar? [practice with English grammar or with the InternetGrammar?]) “mit der Grammatik” (with grammar) (also in deinen Sprach- und Grammatikkursen? [in your language and grammar classes?]) “ja genau” (that’s right) (gab es noch andere Gründe?) [were there other reasons?]

Extracted information
“Ja; durch die Übung …] mit der Grammatik…” (Yes; because of the practice [...] with grammar...

Rule 4) Interviewees might use different terms for elements in the CING, their learning, or problems they encountered; make a note of all terms used (as a basis for processing).

Example: Original transcript information
(Answer to question 4/4a): “Ich habe mir den Bildschirm durchgelesen und dann habe ich mir halt im Content Menu die Tense herausgesucht und eben das Present Perfect…” (I read through what was on the screen and then I looked up the tenses in the content menu and the present perfect...)

Here we made a note of the term “Bildschirm” (screen), which did not clearly communicate what the subject wanted to say. (An examination of the subject’s CING behavior as recorded on video helped us identify what was actually on the screen at the time in question; see Rule 6).

51 Du hast schon ein bisschen Erfahrung mit der CING: War die heutige Arbeit mit dem Programm einfacher für Dich als im Dezember 2005? Warum? (You already have some experience with the CING. Was working with the program today easier for you than it was in December 2005?)
52 Kannst Du dich erinnern und mir genau erklären, was du heute in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? (Can you remember and explain to me in detail what you did first in the CING today to complete the task I gave you?)
“Ich habe mir die Introduction-Seite durchgelesen...” (I read the introduction page...)

Rule 5) As some of our theoretical constructs overlap, content material can be relevant to more than one information category.

Example: Original transcript information
(Question 4/5c)“...also ich bin dann hier auf Perfect Forms, denn Continuous denk ich weiss ich, dass dann immer –ing dranhängt, z.B. dann bin ich halt auf das Perfect, welches Problem war es? PRESENT Perfect, bin ich dann aufs Present und dann Use- und dann wollt ich die einzelnen Seiten bearbeiten” (...so I was on Perfect Forms, continuous I think, I know, always takes –ing, so then I went to Perfect, what problem was it? PRESENT perfect, I went to Present and the Use, and then I wanted to work through the individual pages) (komplett oder nur Teile? [completely or just parts?]) “ja komplett von oben nach unten” (completely, from top to bottom).

Extracted information
First, this answer shows how the subject ruled out irrelevant pages in her search (“Perfect Forms, denn Continuous denk ich weiss ich, dass dann immer –ing dranhängt” [Perfect Forms, continuous I think, I know, always takes –ing]) (we subsequently applied this part of her answer to question 4/8, see Rule 7). Second, it entails information on how she selects pages for her work in the CING (“welches Problem war es?” [what problem was it?]) (this information is also related to “specification of information goal,” question 4/4a), and, finally, it indicates how she worked with the found information (“und dann wollt ich die einzelnen Seiten bearbeiten [...] komplett von oben nach unten” [and then I wanted to work through the individual pages [...] completely, from top to bottom]), which shows her learning strategy (question 4/7).

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Woran erkennst Du, dass diese Seite relevant für deine Aufgabenbearbeitung ist? (How can you tell whether this page is relevant to preparing for your test?)
Rule 6) Verify contradictory information as well as learners’ navigation strategies with the help of the taped CING behavior, if possible.

Example: Original transcript information
(Answer to question 4/4a)“Ich habe mir den Bildschirm durchgelesen und dann habe ich mir halt im Content Menu die Tense herausgesucht und eben das Present Perfect…” (I read through what was on the screen and then I looked up the tenses in the content menu and the present perfect...)

Through verification of the subject’s CING behavior on tape, we could determine that the subject meant the introductory page when he used the term “Bildschirm” (screen).

Extracted information
“Ich habe mir die Introduction-Seite durchgelesen…” (I read through the introduction page...)

In another answer (question 4/11a), this same subject used the term “Startseite” (start page) synonymously for introductory page. These terms were generalized during the generalization step.

Rule 7) If information from other answers, interviewer notes, and the CING behavior tape does not help to allocate the content material, separate it out for further discussion.

There was only one instance in which Rule 7 applied:

Example : Original transcript information
(Answer to question 4/10a) “Ja, also das übliche, dass ich am Bildschirm nicht so gut lesen kann…” (Yeah well the usual, that I can’t read computer screens so well)

The relevance of this answer to the category of CING problems (question 4/10, etc.) is obvious, but it was the only CING problem of its kind and thus needed to be separated out for further discussion.

54 Kannst Du dich erinnern und mir genau erklären, was du heute in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? (Can you remember and explain to me in detail what you did first in the CING today to complete the task I gave you?)
Rule 8) Create a new variable value for content materials that has been separated out as well as for the information that can be combined.

We initially created a new category for the interview data quoted under extraction rule 7 (question 4/10a). Once it became clear that no other subject provided this information, we decided to integrate it into the overarching category of “CING Problems” represented by questions 4/10, 4/12, and 4/13.

Processing

Processing the extracted raw material (Gläser & Laudel, 2004, p. 219) involved the combination and summary of scattered as well as redundant information (responses with different formulations but the same meaning), the clarification and correction of ambiguous or incorrect information (through the addition of other interview information and our observation tapes), and, finally, the organization of data according to its content (Gläser & Laudel, 2004, p. 219). This process included combining questions and extracted information deriving from the combined interview questions. For example, questions 4/3a and 4/4a both relate to the “specification of information goal” and were later combined. The following is a list of general processing steps and the way we applied them in this study.

1) Information on the same variable given in responses to a variety of questions was combined under one variable, with the original source of the information noted in the extraction table (see Gläser and Laudel, 2004, p. 220).

Extracted information: (Answer to question 4/8a) (on tense/aspect, first navigation page) “also nein, überhaupt keine- Continuous weiss ich, dass es etwas ist, dass noch andauert und das Problem ist aber „ich habe gekauft“ und „ich hatte gekauft“; Future nein…” (No, there weren’t any—I know that continuous is something that is still persisting, but the problem is “I have bought” and “I had bought.” Future, no...)

55 Question 4/3: Erkläre mir nochmals in Deinen eigenen Worten, was deine Aufgabe in der CING war. Was solltest du tun? (Please explain in your own words what your task in the CING was. What were you supposed to do?); Question 4/4a: Kannst du dich erinnern und mir genau erklären, was du heute in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? (Can you remember and explain to me in detail what you did first in the CING today to complete the task I gave you?)
Processed information: 1. Specification of relevant information takes place via subject’s pre-existing grammar knowledge. 2. Competent use of self-learning strategies: Subject uses self-learning strategies during CING page title selection derived from her existing knowledge of English grammar. This information was assigned to the meaning categories of Specification of relevant information and Use of self-learning strategies.

2) Contradictory information was clarified with the help of other information given in this interview as well as observational data. A note was made of ambiguous or incorrect information.

Extracted Information: (Answer to question 4/8a): „Meine Seiten [besuchte] waren alle wichtig, Continuous sagt auch aus, dass etwas andauert, wie das Perfect. Andere irrelevante Seiten nur die mit Future im Titel... „(My [visited] pages were all important. Continuous also means that something is persisting, like the perfect tense. Other irrelevant pages were just those with “future” in the title...). Processed Information:

Misunderstanding of the meaning of continuous and the meaning of perfect leads to inefficient topic page selection.

The subject’s responses to questions 4/6a and 4/5b and c indicated that she believed the continuous forms to be related to the perfect forms, as they express similar states. This misunderstanding seems to relate to the subject’s extensive use of irrelevant topic pages during CING work. This subject provided the only incorrect information we could identify: His/her response to question 4/4a “Continuous Forms und dann zu Perfect Forms” (Continuous Forms and then Perfect Forms) did not match our observation data of the subject’s behavior (she did not visit any pages on perfect forms, only pages on the past tense). The subject possibly related the pages on the past tense (e.g., Talking about the past).

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56 Question 4/6a: Und welche Themenseiten haben Dir am besten bei der Aufgabenbearbeitung geholfen? (Which topic pages were most helpful to you as you prepared for your task?) Response: “Continuous und über das Past noch eine.” (Continuous and another one about the past).
57 Question 4/5b: (referring to Question 4/5a) Welche Themenseite hast Du zu allererst besucht? (What topic pages did you visit first?) Response: “Simple vs Continuous”
58 Question 4/5c: Woran erkennt Du, dass diese Seite relevant für deine Aufgabenbearbeitung ist? (How can you tell whether this page is relevant to your test preparation?) Response: “wegen der Überschrift und dem Seitenaufbau” (Because of the title and the page setup).
59 Kannst du Dich erinnern und mir genau erklären, was Du heute in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? (Can you remember and explain to me in detail what you did first in the CING today to complete the task I gave you?)
to the perfect. We marked the incorrect information for future reference and added the pages
the subject mentioned to the list of those she actually visited.

The processed information was entered into separate processing tables (see Appendix C5). The variable values produced by the information were adjusted or created as necessary and later analysed in the following steps:

1) Further processing of information (establishment of a system of meaning categories for each question/category)

2) Interrater reliability test (see Mayring, 2003) performed with the help of a researcher new to the study but familiar with the project and its theoretical background

3) Adapting the process of qualitative content analysis (Figure 30) by Gläser & Laudel (2004) to the material collected in the interviews

Interrater Reliability Test

Researcher B, who was familiar with the research project and its theoretical background and research assumptions conducted the interrater reliability test. She was given the table of extracted information material (Appendices C3 and C4), the verbalized CING observation data (Appendix G2), and the set of variable values (Appendix C7), which was presented as a possible form of representing learners’ response information, but not necessarily the final one. Her task was to screen the extracted body of information and the variables we created and decide how well these variables represented the meaning of the information. This was necessary for the open questions\(^{60}\) (except questions 4/12 and 4/13\(^{61}\)) but not for the closed questions,\(^{62}\) for which variable values already existed in the subject information.

The variable value “Other” was added to the variable value clusters for each question to cover information left in a subject’s response that was represented incompletely or falsely by the existing values. Researcher B made notes of her reasons for adding variable values, thus providing new insight into the meaning of subjects’ information. After she had finished

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\(^{60}\) Questions 3/8, 4/1a, 4/1b, 4/3a, 4/3b, 4/4, 4/5, 4/5c, 4/6a, 4/6b, 4/7, 4/8, 4/10a and b, 4/10c, 4/11a, and 4/11b. Questions 3/4 and 3/5 were not included, as they do not focus on learners’ current experience and merely served as a possibility of comparison for questions 4/12 and 4/13 (Appendix G2).

\(^{61}\) No set of variables exists for these two questions because open questions are analyzed in their original, literal form and thus collect more individual information than can be translated into a variable. Furthermore, many of the responses learners gave to these two questions were categorized with the information relating to other questions.

\(^{62}\) Questions 3/1, 2, 3a and b, 3/6, 3/7, and 4/9.
reviewing all of the information, we discussed the questionnaire again as a team which lead to a further amendment of the variables.

Further amendment of variables

The results indicated that there was agreement on all variable categorizations of subjects’ answers except for questions 4/7, 4/8, and 4/10c. The disagreement on question 4/7 concerned the variable value allocation for interview 210406. Variable values for this question were: 1) Reading rules/explanations; 2) Reading examples/Discovery pages; 3) Exercises; 4) Skipping familiar material; 5) Correction with feedback; 6) Read the page. Researcher A and I had categorized the following extracted information as “Exercises”:

“Ich lese es mir durch (wichtige Punkte rausschreiben, wenn ich genug Zeit hätte), lernen/versuchen einzuprägen und in Übungen versuchen anzuwenden.” (I read it through (make a note of important points if I had enough time), learn it/try to commit it to memory and apply it in the exercises.)

Researcher B instead identified this information as “Other,” since she considered the information excerpt “wichtige Punkte rausschreiben, wenn ich genug Zeit hätte” (make a note of important points if I had enough time) to indicate that the subject took notes during work in the CING. This, however, was not confirmed in the interview sessions, and we agreed to allocate variable value 3 to this extracted information.

The variable values for question 4/8 were:

1) Continuous and future pages = irrelevant; 2) Future pages = irrelevant; 3) Past perfect and future page = irrelevant as well as continuous = unclear; 4) Past and perfect continuous = relevant as well as past and/or perfect in the title = relevant as well as content = relevant; 5) Continuous pages = relevant and future pages = irrelevant; 6) Continuous pages = relevant; 7) Background and foreground = clear as well as content = relevant; 8) Future pages = irrelevant as well as past and perfect continuous = relevant as well as past and perfect in the title = relevant; 9) Past and perfect in the title = relevant as well as title = relevant; 10) Other. The disagreement on this question concerned the extracted interview material from 150506: Past Continuous und Simple Past = relevant, Background und

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63 Question 4/7: Was hast du dann auf den ausgewählten Seiten getan für deine Testvorbereitung? (What did you do on the pages you selected in order to prepare for the test?)

64 Kannst du mir Seiten in der CING zeigen, die nicht relevant für deine Aufgabe waren, die du aber zuerst für relevant gehalten hast? (Can you show me pages in the CING that were not relevant to your task, but that you originally thought were irrelevant?)
*Foreground* = “weiss ich nicht, muss ich nachschauen...” (Past continuous and simple past = relevant; background and foreground = I don’t know, I’d have to look...). While Researcher A and I categorized this information as value 6 ([value 6 contains no reference to background and foreground]), she chose “Other,” because, in her opinion, the information did not convey clearly that the subject considered “past continuous” in the title to be relevant. We reviewed the original, unextracted interview material for 150506, which clarified that the subject thought that “continuous” was related in meaning to the present perfect. We thus amended the extracted information material and agreed on value 6 to represent this response to question 4/8.

The variable values for question 4/10c were:  
1) *Looked at the explanation*, 2) *Found the back button*, 3) *Read more carefully*, 4) *I could have solved them if I’d been alone (start over from the beginning)*, 5) *Made sense of the vocabulary from the context*, 6) *Other*. The last case of disagreement concerned interview 120406. The subject’s response to this question was difficult to interpret or categorize, as the subject claimed to have been able to solve his navigation/orientation problem on his own during the session. This was not confirmed, however, by the observation and interview material, so we identified this response as “Other.” [her name] did not have data on the subjects’ CING behavior to compare to this statement to. Once she was given this information, we agreed to identify the response as “Other.”

Overall, we agreed on the great majority of questions, and the system of variable values appeared to be satisfactorily reliable.

### 4.4.3.2 Analysis of information

According to Gläser and Laudel (2004), analysis must accommodate the research question, should be more creative than rule-governed, and must consider all factors that produced the data. Following our model of analysis (Figure 31), we compared the outcomes of individual case analyses with the group of interview cases by considering every piece of information available.
Weak and Strong CING navigators: General Outcomes

The quantitative data analysis failed to provide conclusive results on the causal links between individual characteristics (e.g. knowledge of English, hypertext usage experience, autonomous learning experience, etc.) and learners’ CING navigation status (weak or strong), so we took it up again here.

Profile

We analyzed weak and strong CING users in relation to their experience with the CING (first or second time) (questions 3/1 and 3/2), their “knowledge of English grammar” (questions 3/3a and b), and their “usage experience with computer-assisted and autonomous learning tools” (Question 3/6). The information collected on the above questions (see Appendix C5), however, showed no great difference between the groups in terms of these three learner profile characteristics. None of the ten learners stated that they had had further experience with the CING since the time when they used it for this research project. We
concluded from this that the learners’ levels of CING usage proficiency were relatively homogenous.

Despite this obvious lack of causality, there was still the possibility that learners’ navigation pattern in the interview session differed from that in the research session due to their experiences with the CING. We thus compared both incidents of learner navigation and found that the strong group performed similarly focused in navigation as during the research session. Weak subjects still displayed less focused navigation behavior. Furthermore, mixed results in language course levels between the weak and strong subjects were found.

The “strong” group of subjects included two learners who were visiting the basic language course (*Foundation Course*), two who were visiting the intermediate course (*Integrated Language Course 1*) and one subject who was taking the upper intermediate course (*Integrated Language Course 2*). Similarly, the “weak” subject group included two subjects who were attending the basic language course, while the other three members were taking the intermediate language course. Overall, this finding shows that the learners’ knowledge level of or general skills in English grammar did not differ significantly between the two groups.

Nor did the characteristic of “usage experience with computer-assisted and autonomous learning tools” show significant differences between the two subject groups. Apart from one member of the “weak” group (110406) who had experience with an educational CD-ROM on the school subjects philosophy and mathematics, the subjects reported no experience with computer-assisted learning tools.

In the end, none of the aspects of the selected learner profile revealed differences between weak and strong CING navigators and the reasons for their weak or strong CING navigation performance had to be sought elsewhere.

*Learner Attitude towards Computers*

In addition to the learner profiles, information on this characteristic was provided both by the qualitative data and the TECOWI Internet expertise questionnaire (Appendix F). I will turn first to the TECOWI outcomes and then to the qualitative interview analysis in order to understand why the “weak” group of learners visited an increased amount of irrelevant pages.

The designers of the TECOWI questionnaire, Naumann and Richter (2001), found that learners’ attitude towards computers was related to their Internet performance. My assumption was that learners who navigate inefficiently through the CING have less Internet expertise than those who navigate efficiently.
TECOWI questionnaire results

<table>
<thead>
<tr>
<th>Interview</th>
<th>170206</th>
<th>260406</th>
<th>270406</th>
<th>080506</th>
<th>150506</th>
<th>110406</th>
<th>120406</th>
<th>190406</th>
<th>200406</th>
<th>210406</th>
</tr>
</thead>
<tbody>
<tr>
<td>Points</td>
<td>6</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>9</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Figure 31: Total scores for TECOWI results

The TECOWI questionnaire determines learners’ level of Internet expertise. The more points learners accumulate for correct answers, the better we can expect their Internet expertise to be. The table (Figure 31) indicates that the interviewees 200406 and 080506 have less Internet expertise than 210406, 120406, and 170206, who all displayed an intermediate level of Internet expertise with a score of 6 points. An advanced level (and the highest total score) was achieved by the interviewees 260406, 150506, and 110406. This group displayed the highest level of Internet expertise.

The TECOWI results only correspond very weakly to our classification of learners into weak and strong. The “strong” CING navigators achieved a cumulative point score of 33, while the “weak” group accumulated 29 points. While lacking any statistical power, this finding leaves room to support the theory that learners’ Internet expertise might indeed help them use the CING more efficiently.

4.4.4 Analysis of interview results

We analyzed the interview results in view of the same meaning categories applied to the quantitative data analysis (Figure 26):

1) Competent use (and assessment) of self-learning strategies
2) Definition of learning goal(s)
3) Specification and use of relevant information
4) Assessment of information relevance
5) Understanding the CING hypertext structure
Furthermore, I included those aspects in our analysis that the quantitative study failed to answer:

6) Prior CING experience
7) Learners’ neglect of the simple past content pages
8) Learners’ problems with the CING material’s salience
9) Learners’ problems with the CING feedback
10) Problems with the overall CING experience

The complete, categorized details of the interview questions and answers are given in Appendix C6 and an analyzed version in C8. This analysis does not include the interpretation or discussion of the findings. This will be done in chapter 5. It must be noted that I do not understand the interview results to capture the entire reality of the learner behavior in question. My deductions and assumptions in this research are to be seen as tentative with room for adjustment. As Gläser and Laudel (2004) point out, subjects often provide information on parts of the set of analysis categories but not on the entire set. This was also true in my study and it was thus not possible to compare cases in every category.

Comparison of causes

Self-Learning Strategies

In the interviews, we first translated the abstract concepts of learning strategies into learners’ actual learning strategies for a grammar task like the one they had been given for their CING work (e.g., I have to look for information on the Present Perfect) and then asked learners to comment on their learning behavior in the CING. Most of the subjects reported that they normally use grammar books to study grammar rules and complete practice exercises (260406, 270406, 080506, 150506, 110406). Others cited language examples and practice exercises (170206), a combination of rules and examples (190406, 210406), or only examples (200406) as their usual learning material. In every case, subjects followed their usual learning strategies when working in the CING. This was supported by the navigational logs as well as the interviews.

These results show that existing learner strategies developed with traditional learning tools such as books can be applied in the CING. Some strategies, however, such as “note taking” (mentioned by 170206, 080506, 110406) are not accommodated by the CING (which
does not include a “notepad” function). It does, however, leave learners free to decide if they want to skip the topics they already know (260406, 080506) or to follow the given content structure until everything has been covered (170206).

One aspect of a successful learning strategy is that learners are able to overcome difficulties they encounter in their learning. Difficulties with the CING that our subjects directly reported included the unclear feedback system (170206, 270406) incomprehensible vocabulary (210406), inability to locate the back button for navigation (080506), failure to find their way out of a particular content area (120406), and the inability to read a computer screen (150506).

Except for 170206, 270406, and 120406, all subjects autonomously found a solution to their problems. Two of the subjects (170206, 270406) unable to solve their difficulties on their own were in the “strong” group of navigators.

*Definition of Learning Goal*

Before their CING work, learners were provided with a clearly defined learning task, which they were then asked to translate into learning goals. All except one of the subjects (170206) stated their learning goal to be the preparation for a test on the simple past and present perfect, but they differed in their understanding of their larger learning goals. Some considered it important to improve their knowledge as well as learn to apply the two grammar topics correctly (260406, 120406). Others, however, focused their learning on the improvement of knowledge of the task topics only (270406, 190406) or merely on the application of the grammar (080506, 150506) in the grammar test (200406) without aiming to comprehend the theory. Yet another approach was described by interviewees 170206 and 210406 who reported being more focused on their individual learning needs in that they integrated their own problem areas with the grammar into the test preparation. Most subjects considered the present perfect more problematic than the simple past. One subject reported that “Continuous” pages as well as “Perfect” pages were important for his test preparation, but the continuous is neither related to the present perfect nor the simple past.

Most learners’ CING behavior exhibited a CING sequence navigation from the tense/aspect topic area to the present perfect content pages (170206, 150506, 200406, 210406), with some also including the intro page (170206, 150506). Subjects' learning goals were very task-focused, except for the subject who considered “Continuous” pages relevant to the learning task (110406).
Specification and use of Relevant Information

The specification of relevant information (information specification IS) involves learners’ learning goal, the given learning task, as well as learners’ knowledge of their own learning needs on the topic.

Many subjects considered their own knowledge level on the simple past and present perfect to be average (170206, 080506, 110406, 120406, 200406, 210406), while a few considered their knowledge level to be between average and good or good (260406, 150506) or between average and weak or weak (190406, 270406).

The correct application of the present perfect and simple past was considered to be particularly important by most subjects (150506, 110406, 200406, 210406), with the simple past being the easier of the two topics (170206, 080506). Many learners considered the content page Use of the Perfect (270406, 080506, 150506, 190406, 200406, 210406) to be the most relevant to their learning; followed by pages on the present perfect (170206, 150506, 110406).

Subjects evidently followed the existing CING structure on the Content Menu to reach the content they were looking for. Overall, the navigational data confirmed that the subjects followed the existing CING structure on the Content Menu to reach the content they were looking for. The simple past content pages, however, were not easily found by subjects as they did not expect to find them under the content title Continuous Forms (120406, 210406).

Assessment of relevant information

Learners' assessment of information relevance of the found CING pages took place via the content titles and content (260406, 080506, 110406, 190406, 200406) and the title’s key words (“present perfect” and “simple past”) (170206, 120406, 210406). The content also helped learners (200406, 210406, 120406) to identify irrelevant pages, particularly in cases where they initially thought the page was relevant. The keywords “past” and “perfect” were often correctly considered to be clear indications of page relevance (270406, 150506, 110406, 200406). As noted above, the pages on the present perfect were considered most relevant to the subjects’ task (170206, 260406, 080506, 120406, 190406, 200406), while some learners took a more holistic approach and found relevant information on various pages (270406, 210406), including those covering the past (110406).

Of the page types the CING provides, the majority of subjects selected the Explanation pages (080506, 120406, 190406, 210406) while some combined the Explanation
with the *Exercise* pages (150506, 110406) or chose only *Exercise* pages (150506). The interviews revealed evidence that the time in the CING was too short and that learners therefore did not visit certain page types (*Discovery* [080506] and *Exercises* [150506]).

*Understanding the CING’s Hypertext Structure*

In the interviews, some subjects did not correctly assess the task relevance of page titles, some had difficulties finding navigational tools (such as the back button) or tried to click the example of the *Content Menu* on the tool’s introduction page (170206).

Only one learner (170206) recommended reading the introduction page before proceeding to the *Tense/Aspect* menu to choose the most relevant pages, while the majority of subjects suggested either the menu (*Tense/Aspect*) as the first step in the search for relevant pages (260406, 270406, 080506, 150506, 110406, 120406, 190406, 210406) or the *Search* option (260406, 080506, 150506, 110406, 120406, 190406).

Other navigation aids learners suggested by subjects for CING navigation included the *Toplinks* (170206, 260406, 080506, 200406), the links on top of each content pages to related close by topic pages (150506) and the back button (270406, 150506, 120406). Subjects also advised skipping irrelevant information (120406), orienting along the CING list of content pages (190406), and ensuring that the page visited is relevant (150506).

*Learner problems with the CING*

The difficulties that learners have with a learning situation are often related to various aspects of the context. This can involve learners' prior knowledge, learning preference or learning strategies or the learning material, its structure, its type of presentation, or even the time they have available.

The discussion of the reasons for subjects' difficulties with the CING will therefore be discussed in chapter 5 to cater for the need to view the topic from various viewpoints. In the following chapter I will discuss these findings at greater length, and then turn to suggestions for ways to improve the CING in chapter 6.
4.5 Summary and conclusion

This research design was made to produce findings that help to investigate the CING’s success as a learning tool and its usability with first year students of English at the Chemnitz University of Technology.

With the help of the grammar pre and posttest data it was indicated that learners improved their performance on a grammar gapfill test after having worked in the CING by one point. The majority of learners had an intermediate level of English, had been mainly instructed in the language at school and were more extrinsically motivated than intrinsically to learn and apply the English grammar correctly. Furthermore, they had never used the CING before the research session.

Questionnaire data on learners CING page title knowledge showed that most of the CING Simple Past and Present Perfect content pages listed were comprehended correctly by learners, but that some pages (e.g. Speech Time and Reference Time) were miscomprehended, especially if the titles lacked keywords to both topics. Correlations of learner profile information with title knowledge data showed that learners with better knowledge in English comprehended more of the grammar titles correctly. Nevertheless, the CING content page Simple Past entails clear topic keywords but still visited by only a few subjects regardless of learners’ language level. Finally, the interview sessions helped to explain this finding through learners’ comments that they would have never expected (or were surprised to find) the Simple Past page under the content link Continuous Forms and therefore did not visit the page.

CING experience and subject profile

As basis for our usability investigation our CING experience questionnaire revealed that the majority of subjects negatively experienced autonomous learning with the CING, the metalanguage in the tool’s grammar material (i.e. metalanguage), its page titles as well as the language examples which failed to show grammar structures in a salient way to them. The overall vocabulary in the language examples was experienced negatively by half of the subject group and about a third reported negative experience with the CING’s feedback. Correlations revealed a weak relation between English language level and learners’ experience with the CING’s vocabulary, content page titles and metalanguage. The better the
language level is the better learners’ experience can turn out for these CING aspects. The same was found for learners’ CING title knowledge (i.e. from the profile questionnaire) and their vocabulary experience.

What the qualitative investigation succeeded to reveal was that learners’ material salience problems were due to fairly complicated and complex language examples, unclear grammar structures in the language examples and overall vocabulary miscomprehension.

Learners’ profile characteristics also related to their CING behaviour during the research session. Overall the subject group visited task relevant pages and only zero to three task irrelevant pages. Correlations showed that learners with the most intensive English language instruction in their school education (i.e. English as major subject in their bursary) visited more relevant pages. Learners with a better experience of the vocabulary, metalanguage and language material salience showed to visit more relevant pages while learners with higher motivation needed less time for navigation or for reading the introductory page.

These results clearly show that the CING can cause comprehensibility problems and some of the data even hint at the fact that a better knowledge of CING titles leads to increased learner problems with the CING feedback. In contrast to this, learners who enjoy working with computers experience the CING feedback system better. In the qualitative interview data we found that the system of feedback presentation made it hard for learners to relate the feedback to the exercise examples while many were confused about the meaning of the minimal feedback to their exercise performance. This finding can relate to the above mentioned result of better level of CING title knowledge and feedback problems as a learner with an advanced knowledge level of a grammar expects particular feedback results to his exercise. Once the feedback is different than expected learner confusion is a likely result. Since the qualitative data did not provide confirmation for this assumption, more research is required to find an explanation for this finding.

**Interview findings**

The qualitative interview data (Appendix G2) confirmed that learners’ usual learning strategies (e.g. as applied in the past) were actually applied in the CING. This shows that the tool does cater for learners’ usual learning behaviour. However, some commented on using notetaking in learning which the CING does not support. The learners’ CING problems which
the interview data revealed include the CING’s unclear feedback, incomprehensible material, overlooking the Backbutton, some learners’ failure to leave a CING content area when they wanted (but didn’t find a way out) and the inability to read from the computer screen. These findings coincide with the former quantitative findings.

Despite the problems, learners’ behaviour and interview comments proved that learners’ definitions of their learning goal were task relevant (e.g. improve my knowledge of the Simple Past and Present Perfect) and in two cases even learning needs specific (e.g. learn about topics that cause me problems). The findings also revealed that if learners misunderstood the CING content titles this learning goal definition was affected, as it would include navigational paths that might not lead to the intended content page.

Assessment of relevance of page contents took place in a task oriented way, except for those cases where the page title had been misunderstood. In those cases the assessment of the page’s task relevance took slightly longer or failed in one case.

Navigation in the CING was overall task relevant and lead to various pages mostly along the CING existing content sequence that learners used as aid for their content orientation. This made the complex and extensive hypertextual content structure of the CING navigable to learners, who suggested a search option to support this navigation. The Tense/Aspect content menu point was also considered an important point in learners’ navigation. This shows that the CING is challenging to learners but not impossible to work with. According to learners’ interview responses experience with the CING eased navigation and content comprehension with the tool.

In addition to the above research questions relevant findings, the interview data also revealed that some learners found their English language skills too low to understand the feedback responses or vocabulary of the language material correctly immediately. A solution for them was to either, read the information carefully and deduct the meaning of unknown vocabulary from the context, use dictionary alongside the CING in the future or, to have more time available for working in the CING. Careful reading was also suggested as solution to the disorientation that many learners experienced in the CING content due to a lack of a clear content index and structure. While many experienced the autonomous learning in the CING negatively, interview comments revealed that there were also learners who considered the autonomous, self-discovery learning in the CING a good way of working out the grammar
themselves for learning. The CING graphs were welcomed by more subjects than rejected on
grounds of overloaded information presentation.

Due to the fact that the investigation revealed various problem areas with learners, we
are required to consider measures that make the CING’s complexity less of a challenge to
learners, but turn it into an opportunity for learners to use to their own advantage. Potential
approaches to a solution of this and other CING issues will be discussed in the context of the
future outlook of this study in Chapter 6. For reasons of relevance, the discussion will relate
solutions directly to the empirical results and findings of the theoretical discussion of the
CING (Chapter 2 and 3), which we will present summarised and focused on the research
analysis categories.
5. Discussion of findings

Following the presentation of the quantitative and qualitative results, I now return to the research assumptions that guided my usability investigation of the CING as well as the criticisms of the tool underlying my research questions. The results will be related to each other, interpreted and further correlated to come to an understanding of the different interrelations relevant to the CING as a successful grammar learning tool.

5.1 Empirical study findings

5.1.1 Learner profile, learner experience and CING usage

This section will present the results the correlations and discussions of the study data the profile questionnaire, the CING experience questionnaire and the CING navigation log-files produced.

Learner Profile and CING Behavior Data Correlation

The set of data from the learner profile questionnaire and the CING navigation behavior data was correlated with the CING experience variables using a Pearson product-moment correlation for all data sets except those with graded (i.e., Likert scale) data, which were correlated with a Spearman rho correlation. The calculations focused on those variables for which the data showed no homogeneity and are presented in different tables in Appendix M.

School-leaving Exam Subject, Years of English Instruction, Language Exchange

The correlation revealed a weak linear relation between school leaving exam subject and the variables number of relevant pages visited \((r = .394, \text{ Table 6})\) and total time spent on relevant pages \((r = .266, \text{ Table 6})\). Learners who had received more intensive English language instruction visited a greater number of relevant pages during their CING session and spend more time on these pages. It seems that these learners might locate relevant pages more easily and evaluate their relevance to their learning task more efficiently, although this does not include learners’ ability to evaluate these pages’ relevance to their individual learning needs. Data on learners’ language exchange experience did not show any significant correlation.
English Language Exam Result and Like Work with Computers

There was only a weak correlation between English language exam result and time spent on intro page \((r = -.250, \text{Table 7})\), indicating that the higher the exam score, the less time was spent on the intro page. No correlation could be established for the variable Like Work with Computers.

Extrinsic and Intrinsic Motivation

No correlation was found for the variable intrinsic motivation, while extrinsic motivation weakly correlated with total time spent on navigation \((r = .303, \text{Table 9})\). The more learners are extrinsically motivated, the more time they spend on navigation within the CING.

CING Title Comprehension

There seems to be no relation between learners’ correct understanding of the CING topic titles and their navigation within the CING \((\text{Table 10})\).

Learner Profile and CING Experience Data Correlations

School-leaving Exam Subject, Years of English Instruction, Language Exchange

Only the variable school leaving exam subject and learners’ experience with the program’s titles correlated weakly \((r = .285, \text{Table 2})\). The longer and more intensive learners’ English instruction in their final years of Gymnasium, the better their experience with the CING page titles.

English Language Exam Result, Language Learning Experience, Like Work with Computers

Weak correlation coefficients were found for English exam result and the variables vocabulary \((r = .277)\), metalanguage \((r = .243)\), and titles \((r = .232)\) \((\text{Table 3})\). Additionally, weak correlations were found for like work with computers and the variables vocabulary \((r = .255)\) and feedback \((r = .266)\) \((\text{Table 3})\). The better learners' performance in English exams, the better their comprehension of the CING's vocabulary, metalanguage and topic titles. Preference for work with computers seems to aid in feedback and vocabulary comprehension.
CING Title Comprehension (learner profile questionnaire)

Although a weak linear relation was found between the variables of CING title comprehension (learner profile questionnaire) and the experience variable of vocabulary ($r = .214$), the value of significance ($>.116$) was high for this result. This makes it inconclusive, as the likelihood of error is considerable and no further consideration was taken of this result.

English knowledge level and CING usage

The above data show that learners with better results on their English language exam (Appendix A7) spent less time on the CING intro page than other students (see chapter 4, “Empirical results”). Learners with an intermediate (ILC1) or upper-intermediate (ILC2) level of English seemed to require less introduction and support in working in the CING. I also found that learners with better English language exam results seemed to have more positive experiences with the vocabulary of the CING language material, its metalanguage, and topic titles. The study did not produce any results indicating that improved experience with feedback and autonomy related to learners’ superior English language skills.

Use of individual CING pages

As outlined in chapter 3 and in the introduction to the questionnaire item of CING title comprehension, learners’ usage of CING pages is likely to depend on their comprehension of the program’s page titles. Our analysis of learners’ overall CING page usage (Appendix L, Tables 9-23) shows that learners used those pages frequently whose titles contained a clear and unmistakable relation to the topics of simple past and present perfect (e.g., Present Perfect 1; For + Present Perfect; Perfect: Yes or No?). Less frequently used pages (e.g., For + Other Tenses, and Speech Time and Reference Time) had less clearly worded titles.

The results from the CING title comprehension questions showed 69.1% of subjects correctly allocated the page titled Speech Time and Reference Time. This was the title with the lowest allocation result. I conclude from this that learners visited this page less because they found its title incomprehensible. Another page that received even weaker usage results was Simple Past (47%) although it is listed at the beginning of its navigation page index. Given that the title contains a clear indication of its content topic and was therefore excluded from the CING title comprehension task, we must look to the qualitative investigation to determine
the reason for its low usage. Overall, the starting assumption that learners might focus on pages with easily understandable titles was supported by the quantitative research.

Qualitative results on CING page usage

For reasons of relevance I include a brief discussion of qualitative data in CING page usage. One reason for the above described behavior seems to be that learners felt that they already understood the simple past and its usage and saw no need for further practice (170206, 270406, 150506, 190406, 200406). Additionally, learners found it more difficult to find the Simple Past pages, as they did not expect them to be located under Continuous Forms (150506), found it an obstacle to find the pages on the simple past pages there (210406), or could not find it under the Continuous Forms sub-topics under Tense/Aspect (080506).

The topic and page links in the CING require amendments to make it easier for learners to find relevant pages. The allocation of the Simple Past pages under the Continuous content link should be explained (e.g., in the index) or these pages should be presented under a more obvious content link.

Experience questionnaire items

I will now interpret and relate the statistical values from the experience questionnaire (Appendix E) on salience, metalanguage, autonomous learning, topic titles, feedback, and vocabulary to other data sets.

60% of all subjects disagreed with the statements on salience of material, almost 70% of all subjects disagreed with the statements on metalanguage (Appendix A7, Table 1). These results hint at the following. The design and presentation of the CING grammar material is not salient enough for many of the subject group. Correlations of this result with other data sets indicated that the more salient the material appeared to subjects, the greater number of relevant pages they used during their CING visit (Appendix K, Table 1). We can conclude that the difficulties learners experience with the CING’s material salience (including vocabulary) affect efficient page usage in the tool.

The CING’s metalanguage appears to be too difficult to more than 69,9% of subjects. Correlation results of the different data sets with metalanguage revealed (see Appendix M, Table 3) that the better subject's English language exam results were, the fewer problems they had with the CING’s metalanguage. Good results in English language exams can mean better knowledge of English in general and possibly its metalanguage. Therefore subjects
understand CING metalanguage better. Another weak correlation that appears less logical (see Appendix M, Table 4) indicates that subjects, who use eMails, ecards, weblogs and the internet often, experience less problems with the CING's metalanguage. While ecards and the internet require no knowledge of English metalanguage, it is possible that people who use eMail and the internet often have developed strategies to deal with unknown terms they encounter without letting them interfere with their navigation activity. If this is true cannot be confirmed in this study.

The majority of subjects had for the most part learned foreign languages in a traditional classroom environment with a tutor. Their experience with the autonomous work in the CING was, accordingly, more or less negative (93.6%, Appendix A7). The correlation of learners’ profile data, experience data, and CING behavior data showed that learners who spent more time navigating had a better experience of autonomous work in the tool. This suggests that a careful search within the tool paired with a more selective approach to material choice requires learners to make independent learning decisions (e.g., on learning steps and material choice), which might require more navigation steps and more time for selecting material.

This study did not investigate whether learners can learn autonomous learning strategies. The qualitative data showed, however, that many learners found the CING easier to use after having first become familiar with it, because they managed to acquire important strategies during their first CING experience.

61.8% of all subjects disagreed with the statements on the titles category. Through the correlation with other data sets it was revealed, that learners with better results in their English language exams had a better experience with the CING titles.

The experience category feedback received a considerable amount of positive experience statements (61.8%, Appendix A7), although 38.2% of the subject group still reported rather negative experiences with the feedback. This indicates a generally positive experience with the CING. It has to be noted that this is only a weak trend. When I correlated the results with other data sets it was revealed that learners who like to work with computers has a more positive experience with the CING feedback.

The qualitative data sheds light on the reasons for the negative experience results and will be discussed later.
Subjects reported a slightly more positive experience with the CING's vocabulary with 56.4% disagreeing with the statements in the category *vocabulary*. Even if slightly below the above categories, this is still a considerable number of subjects that experienced difficulties with the CING's vocabulary. Correlations showed (Appendix M, Table 3) that learners with good English language exam results and who like to work with computers had better experience with the CING vocabulary. Furthermore, a more positive experience with the tool’s vocabulary could lead to a higher rate of task-relevant CING page usage (Appendix K). Ways to improve users’ experience are discussed in chapter 6.

These outcomes show that subjects who are successful in their English language exams have a considerable advantage in using the CING's metalanguage, titles, and vocabulary. Subjects who like working with computers also seem to have an advantage when using the CING, as they are familiar with feedback functions and obstacles they easily apply in their work or overcome.

**Overall Page Usage**

Learners used those pages most frequently that contained a keyword related to the topics of the simple past and present perfect (*Use of Perfect, Present Perfect 1; Present Perfect 2; Present Perfect 3; For + Present Perfect; Perfect: Yes or No?).* Less frequently used pages (e.g., *Since: Problem!, For + Other Tenses, Talking about the Past,* and *Speech Time and Reference Time*) lacked this clearly labeled connection to the topics in question (Appendix L, Tables 9-23).

The most frequently visited pages also appear first in the topic page list on the *Select Navigation Page*. The *Speech Time and Reference Time* page is also located at the top of this list, but received considerably fewer visits by learners than pages with positions further down on the list. An explanation for this is that only 69.1% of all subjects correctly allocated this particular page (Appendix A1). This constituted the lowest title allocation result and suggests a relation between learners’ CING title comprehension and their tool usage.

Very few viewers were also counted for the pages *Since + Present Perfect* and *Perfect in Context*. Both pages are located in the middle of the topic page list on the *Select Navigation Page* and could thus have been ignored by learners. Time constraints of the
research session could also play a role in the rare use of these pages as the other pages learners had already visited appeared to provide the necessary information for the task.

Despite its position at the top of the navigation page index, the Simple Past page was visited only infrequently by subjects (47%). The reason for its low frequentation thus does not appear to be its title or position on the navigation page list and the quantitative data does not provide an explanation for this either. I return to this case in the qualitative data analysis in the next section of this chapter.

CING Behavior and CING Experience Data Correlations

The correlation of these variables resulted in the following outcome (Appendix K, Table 1): weak correlation coefficients were found for number of relevant pages and metalanguage ($r = .322$), for total time relevant pages visited and vocabulary ($r = .376$), for total time irrelevant pages and vocabulary ($r = -.355$) as well as metalanguage ($r = -.299$), and finally for total time navigation and vocabulary ($r = -.339$). Other weak linear relations were found for the following variable pairs: time spent on irrelevant pages and vocabulary ($r = -.396$) as well as metalanguage ($r = -.255$) and time spent on navigation and autonomy ($r = .300$). Average correlation coefficients were found for the variables number of relevant pages and salience ($r = .420$) as well as vocabulary ($r = .404$) and the variables number of irrelevant pages and vocabulary ($r = -.402$).

These results indicate that the better the experience the subjects had with the CING in terms of its vocabulary, metalanguage, and the salience of its grammar material, the more often they visited relevant pages and the longer they spent there. Furthermore, the better the learners’ experience with the CING’s vocabulary, the less time they spent navigating. There is also evidence that a poor understanding of the tool’s vocabulary can lead to an increased usage of and time spent on irrelevant CING content pages. I conclude from this that an understanding of the CING’s language material and its vocabulary is vital for learners’ efficient use of the CING. Comprehension of these elements and the resulting positive experience lead to an improved navigation and use of relevant content pages in the CING.

Hypertext experience

The quantitative part of the study did not reveal a relation between the subjects’ hypertext experience and their CING usage. The qualitative data, however, indicated that learners found the CING easier to work with the second time around. While this improved
experience of the tool might not be exclusively due to a better understanding of its hypertext content, it shows that prior experience with the CING helps learners.

5.1.2 The Pre-and Post-test and research assumptions

5.1.2.1 The Pre-and Post-test

Two of my research assumptions were that only comprehensible language material is conducive to learning with the CING and that the explicit teaching of rules supports acquisition. The study found that some learners had negative experiences with the tool’s material (i.e., its vocabulary, metalanguage, salience of grammar structures, and topic titles).

Nevertheless, the grammar pre- and post-tests provided tentative evidence that the majority of all subjects improved by one item after 40 minutes of CING work. In the pre-test, 69.1% (Appendix A6) of the subject group was able to solve more than half of the test items correctly, while a quarter (25.5%) of all subjects correctly filled in seven items and 30.9% correctly filled in between eight and ten of a total of ten items. The outcomes of the post-test (Appendix A6) showed improvement, with 79.9% of all students solving more than half of the items correctly and 56.3% of the students correctly filling in between seven and ten items.

An examination of the distribution of extreme results in relation to the overall median value was necessary to determine whether there was an increase in subjects’ total number of correctly solved items (total correct item solution) between pre- and post-test. I used box plots of both tests for this.\footnote{"In Box Plots [...] ranges or distribution characteristics of values of a selected variable (or variables) are plotted separately for groups or cases defined by values of a categorical (grouping) variable. The central tendency (e.g. median or mean), and range or variation statistics (e.g. quartiles, standard errors or standard deviations) are computed for each group of cases and the selected values are presented in the selected box plot style" (Retrieved from www.statsoft.com/textbook/statistics-glossary/b/?button=0#BoxPlott-Medians ).} They show an increase of one point from pre-test to post-test results median. While the pre-test median was seven, the post-test’s median value was eight, proving that an improvement of subjects’ test performance from pre- to post-test took place. In order to support this finding, I analyzed the mean values of both tests, which also showed an improvement of one point from pre-test (M(55)= 6.42.) to post-test (M(55)=7.42.). Furthermore, I found comparable results (between pre- and post-test) for their standard deviation (SD): SD pre-test=1.9 and SD post-test=1.9. This shows that the overall test results included no extreme results, making the median values for pre- and post-test acceptable. In
In order to determine whether these findings are generally applicable to populations like our subject group, I also calculated a t-test (Appendix A6, Table1):  

\[ t (df) = -4.256 \text{ (p}< 0.01) \]

The fact that \( t (-4.256) \) is clearly different from zero proves that the pre-test and post-test median values are not the same and that improvement took place. This result is also highly significant with \( p =.000, df = 54 \), and a SD value below the individual test SD values.

Nevertheless, this result has to be treated cautiously, as I was not able to compare it to the test results of a control group taking the tests without working in the CING. As it is, I can only assume but not say with certainty that the measured improvement derived entirely and exclusively from the subjects’ CING work.

### 5.1.2.2 Findings related to the research assumptions

#### English Language Skills

The more English language skills learners have, the better they will understand the CING and the better their CING work experience will be. My investigation of learners’ language levels produced the following findings: first, learners with better results in their English language exam spent less time on the CING intro page than other students. Second, learners with better English language exam results seemed to have a better experience with the vocabulary of the CING language material (metalanguage and topic titles). These findings support the first part of my first research assumption. The second part of this assumption was also supported for the CING aspects of vocabulary, metalanguage, and titles, but not for learners’ experience with the CING’s feedback and the autonomy it requires.

#### Authentic language material

Authentic language material can contain vocabulary that is unfamiliar to intermediate learners. This also applies to the CING grammar material, which is largely based on an earlier CING version written for advanced learners and EFL teachers (Heller, 2004a). My findings (Appendix A7) show that a significant portion of learners had a negative experience

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68 “The t-test assesses whether the means of two groups are statistically different from each other. This analysis is appropriate whenever you want to compare the means of two groups” (Retrieved November 13, 2011 from [www.socialresearchmethods.net/kb/stat_t.php](http://www.socialresearchmethods.net/kb/stat_t.php)).
with the CING topic titles (61.8%), the tool’s metalanguage (69.9%), and the salience of grammar structures within rule and language material (60%). There was a virtual half split of the subject group into those who reported a positive experience with the CING vocabulary (43.6%) and those who reported a negative experience (56.4%)\textsuperscript{69}. The kind of experience learners have with the CING’s vocabulary indicates how well they were able to comprehend it.

In order to understand the reasons for these problems, I looked at the following correlation results: the category of vocabulary correlated weakly with the learner profile category of exam result (Appendix M, Table 3: $r = .277$) and the behavior categories (Appendix K) of number of relevant pages visited ($r = .404$), total time relevant pages ($r = .376$), total time of irrelevant pages ($r = -.355$), as well as number of irrelevant pages ($r = -.402$). I conclude from these results that learners’ language skills and their understanding of the tool’s page titles can contribute to their experience with the CING vocabulary. It was also found that an advanced language level can help learners to better understand the CING metalanguage terms (Appendix M, Table 3: $r = .243$), while a positive experience of metalanguage seems to lead to an increased use of relevant pages ($r = .322$) and less time spent on irrelevant pages ($r = -.299$) (Appendix K, Table 1).

Moreover, I found evidence that more intensive language instruction in learners’ final years at Gymnasium (Appendix M, Table 2: $r = .285$) and an advanced level of English (Appendix M, Table 3: $r = .232$) improves their experience with the CING’s titles. The qualitative investigation of learners’ CING usage produced additional insights on the reasons leading to learners’ difficulties with CING material comprehension (see “Qualitative analysis” section).

**Material Comprehensibility**

Only comprehensible language material (rules and language examples) supports language acquisition with the CING. The findings on learner experiences with the CING’s (authentic) materials showed that some learners had a negative experience with the tool’s vocabulary, metalanguage, and salience of grammar structures in the material (Appendix A7), while learners with more advanced levels of English seemed to experience fewer problems with the vocabulary and metalanguage of the tool (Appendix M, Table 3). This suggests that the CING fails to provide enough comprehensible material to all learners. Nevertheless, the

\textsuperscript{69} The 12 subjects who partly agreed with the statement were included in the group who experienced the CING vocabulary as comprehensible.
results of the post-test indicate that learners improved their grammar knowledge after using the CING despite the difficulties they had with the content material. Again, the qualitative investigation provided more detailed information on the comprehension difficulties learners experienced in the CING.

**Explicit / Formal teaching of language structures**

The explicit and formal teaching of language structures supports the acquisition of these structures. The CING is a self-instruction tool for English language learners and, as discussed at length in chapters 2 and 3, lacks an instructor or tutorial program to aid users during their work. The pre- and post-tests indicated that 40 minutes of self-instruction with the CING can result in an improved acquisition of grammar knowledge on the simple past and the present perfect. There was indication of an improvement between learners’ pre-test and post-test results, which means learners do not necessarily require formal instruction to learn grammar with the CING.

**Salience of Grammar Material**

The grammar structures in the CING material have been sufficiently highlighted for learners to notice them. The majority (60%) of the subject group reported negative experiences with the CING’s material salience (Appendix A7). An investigation of other correlations indicated that the more salient the material appeared to subjects, the greater the number of relevant pages these subjects used during their CING visit (Appendix K, Table 1). However, no evidence was found that could explain why learners’ experience with the tool’s salience was negative. See the qualitative investigation for greater insight into this area.

**Feedback in Grammar Learning**

Feedback promotes learning as it helps learners to notice mistakes in their language production and informs them about their level of applied grammatical competence. Of the CING experience categories, only feedback received an average number of positive answers (30.91%) and a fair amount of partly positive experience statements (30.91%). This result does not necessarily mean that the CING feedback helped learners’ learning, but it can be assumed that it supported their work in the CING. A more in-depth and long-term study of
students’ experience with the CING’s feedback could indicate how exactly it supports learners. The qualitative investigation helps account for the 38.2% of the subject group who reported difficulties with the CING feedback.

**Hypertext and Autonomous Learning**

*Learning with a hypertext differs considerably from traditional learning. Goal-oriented navigation and orientation in the hypertext structure can require prior experience with hypertext material.* This assumption was addressed in the interview questionnaires as part of the qualitative study.

*Autonomous learning strategies help learners to define learning goals, select relevant learning materials, and apply appropriate learning steps and strategies for their task.* The learner profile data revealed that the majority of subjects had primarily learned foreign languages with a tutor in a class environment. The fact that more subjects experienced working autonomously in the CING as negative (63.6%) than neither positive nor negative (30.9%) or positive (5.5%) shows that learners found it difficult to work autonomously in the program. The data correlation of learner profile data, experience data, and CING behavior data presented only one weak linear relation between *total time navigation* and *autonomy* ($r = .233$) (Appendix K). For the autonomous learning strategies learners actually applied in their CING work, see the qualitative study results.

*Learning strategies can be learned.* This assumption is addressed in the qualitative analysis.

**5.1.3 Empirical study: Additional findings**

**Variables that produced no or inconclusive results**

The variable *English Language Exchange*, which produced no results, does not seem to have any relation to other variables in the study. As mentioned in the section on questionnaire development, the construct of learners’ experience with language exchange is difficult to define. The intensity and extent of English language input (instructed or uninstructed) learners received as part of their exchange could not be clearly determined for the purposes of this study. So even if learners took part in exchange programs, the impact this had on their English language level is likely to be so small that there were no noticeable
differences between the group who took part in language exchange and the one who didn’t. If this was the case, no linear correlation with other data groups would be shown.

The variables *CING title comprehension* and *like work with computers* produced inconclusive results. *CING title comprehension* shows a negative linear relation to learners’ experience with the variable *feedback* (r = -.338), which indicates that learners with a low level of *CING title comprehension* have a more positive experience of the CING feedback. A possible explanation for this is that learners who have no trouble with the CING page titles (on the simple past and present perfect) might also have a level of knowledge on the grammar topics that leads them to expect more specific feedback than the CING provides. I return to this in my discussion of the qualitative investigation, below.

It was also found that learners who like to work with computers had a better experience with the CING’s language material vocabulary (r = .255) and the feedback function (r = .266) than learners who stated they did not to like to work with computers. Learners who enjoy working with computers in general might be able to better utilize the minimal CING feedback for their learning, as they are accustomed to this kind of computerized feedback. The same it seems could apply to learners’ experience with the CING vocabulary (r = .255). Frequent work with computers requires autonomous behavior of learners and the use of trial and error methods for finding solutions to usage problems. Users comfortable with this kind of environment rely less on fully understanding all the language content in order to solve a problem.

### 5.1.4 Qualitative Findings and research assumptions

In the following I discuss the qualitative findings with regard to learners’ negative experiences with the CING titles, the CING material (e.g., language used in the grammar rules and language examples), the salience of the CING’s language material, and the tool’s feedback system, as well as learners’ preference for pages on the present perfect and the overall low number of visits to pages on the simple past.

**Feedback and Material Salience issues**

Only a few interviewees mentioned their experience with the CING feedback. The main issue with the CING feedback for these subjects seems to have been the system of presentation that made it hard for them to relate the feedback responses to the associated
exercise sentences (170206). Learners were unable to understand which of their responses were correct or incorrect based on the minimal feedback (270406, 200406). Other comments revealed problems with the CING feedback's level of detail which made it inconclusive to them (“not detailed enough” 200406).

There is a consensus in the research that any feedback is considered more helpful than no feedback, and learners by and large had a positive experience of the feedback option, despite some problems.

Subjects provided only a few, albeit very clear, comments regarding material salience. While the language examples were complicated and too complex for some learners (260406, 270406), others complained that the grammar structure in the language examples was not clear to them (110406) and that the vocabulary was, on the whole, challenging (210406). This last learner solved this issue on her own, but other responses suggest that the subjects would have preferred to work with a dictionary, easier sentences, and more time available for the task (210406). One subject (260406) compared the sentences that contained non-salient information to “nested sentences” and stated that the problems she had comprehending the sentences made her overlook the grammar structure.

Comprehension of the grammar material’s metalanguage

There was no direct evidence that learners had a negative experience of the rule material, but the fact that many of them considered the CING’s language material too complex and therefore not salient enough for the representation of grammar rules can also indicate a less than positive experience with some of the CING’s grammar material.

Use of simple past pages

Not all of the interviewees visited the Simple Past page or other pages on the simple past during their CING work. Those who did check the Continuous content link first confirmed in the interview that they did not see a relation between the continuous and the simple past. They visited the page by error, either to see what it contained or to confirm that the content was irrelevant if the title wasn’t immediately clear to them. Others who visited the Continuous content link did not consider the page important to their task as they did not
expect it to contain content on the simple past. This further supports the finding that subjects found the content titles to be unclear (e.g., 210406), which led to uncertainty on how to proceed in the content structure in search of task-relevant material.

5.1 Qualitative findings on autonomous learning

Self-learning strategies

The usage and interview results indicate that the CING can provide learners with the material they require to implement their individual learning strategies. The learning strategies we observed for the most part included some form of rule revision and practicing these rules in exercises, with or without examples. All subjects whose learning strategy included exercises stressed that exercise feedback was an important factor as it provided information on their performance.

On these grounds, it is evident that our subjects were able to learn with the CING and apply some form of self-learning. Many of the subjects followed the CING sequence of content in their movement throughout the tool, although some deviated from it to navigate outside the page structure (e.g., 200406). Even if pages in the sequence were skipped, often learners returned to the CING’s Select navigation page in order to choose the next content page. This means that learners’ applied their self-learning skills in their search for material in the CING by navigating through the surface levels of the CING index rather than moving independently within the complex content structure. Navigating independently within the CING structure can be demanding and requires clear learning goals as well as an understanding of the meaning of the titles. It also appears that successful navigation behavior does not necessarily mean that learners can always overcome the problems they face while working in the CING.

Definition of learning goal

All subjects, except one (110406), defined their learning goal completely satisfactorily for their learning task with the correct learning topics and pages. The given learning task appears to have strongly guided this learning goal definition. Subjects' confirmed this by stating that the application of grammar correctly (080506, 150506) in the grammar test

Subject 150506 stated, for example: “das hätte ich nicht gedacht, dass Simple Past unter Continuous steht.” – “I wouldn’t have thought that would appear under Continuous.”
(200406) was more important than comprehending the theory. This means that our subjects might need a learning task to define their learning goal and that the lack thereof could lead to a learning goal definition that is less focused. Further research is needed to confirm this assumption.

Some learners (170206 and 210406) did not depend solely on the learning task, but also integrated their own learning strategy, needs or grammar knowledge into their goal definition (e.g. “The present perfect is a more complex topic for me than the simple past”). Learners’ own grammar knowledge is a vital part of task realization in my AL and IS model (Figure 29, see chapter 4.4.2.1). Learner’s IS is also influenced by their awareness of their knowledge gaps in a particular field. This awareness can lead to task-focused behavior in IS that is even more tailored to the learner’s individual needs.

Subjects also reported that the first topic they needed to visit was the present perfect because it was most difficult for them. This coincides with most of the other learners (170206, 270406, 150506, 190406), who consider the present perfect to be more problematic for them than the simple past (080506).

The case of the subject who mistook the “Continuous” pages as relevant to the learning task lies different. It could confirm a potential difficulty of comprehending metalanguage like the term “Continuous” or a misunderstanding of the grammatical concept of aspect, which is divided into the “Continuous” and the “Perfective” aspect. The received information did not provide information to confirm either of the assumptions.

The learners’ CING logs provided additional information on the page sequence they followed. Most of the interview cases followed a typical CING sequence navigation from the tense/aspect topic area to the present perfect content pages sometimes including the intro page. This means the CING structure could have been used by learners as a guide in their search for task relevant information. The complexity of a hypertext structure often forces users to follow a given path, in the CING the navigation path from general content areas, to individual pages via the select button. Thus the CING navigation path could be considered as a successful navigation help.

Information specification

Information specification (IS) takes place before learners have selected particular pages and entails their own knowledge level on the task topic and their usage of material for task realization. Most subjects stated their own knowledge of the present perfect and simple
past to be good to average with only two subjects assessing their knowledge as being average to weak. All except one subject were able to name task-relevant grammar topic aspects (e.g., usage of the simple past and present perfect in context), which means that their existing knowledge of the topic area was sufficient to guide them to relevant material. The exception was a learner (110406) who thought that the continuous is closely related to the present perfect and acted accordingly by visiting several pages on the continuous first before working briefly on pages related to the simple past and present perfect. Misunderstanding a task or a grammar structure can have a strong impact on using the CING. It can lead to an incomplete definition of a learning goal (as argued above), to misguided information specification and incorrect navigational behavior. Learners might visit right and wrong content pages because they misunderstood titles, further compounding their misunderstanding along the way or wasting valuable time despite the fact that they also found the right content.

In a majority of cases, learners found information on the correct application of the present perfect and simple past to be particularly important (150506, 110406, 200406, 210406), with the simple past being the easier of the two topics (170206, 080506). A more rule-focused information specification took place in three cases, where the subjects considered rule explanation and the distinction between the simple past and present perfect to be the most important for their preparation (170206, 260406, 270406, 080506). Case 120406 considered improvement on the signal words for both topics to be most important. These comments show very different variations of correct information specification (IS) that was achieved by subjects.

Many learners successfully selected the content page Use of the Perfect (270406, 080506, 150506, 190406, 200406, 210406) to be the most relevant to their learning; while others named the CING’s intro page, followed by pages on the present perfect (170206, 150506, 110406). Considering learners’ comments on the present perfect being more difficult than the simple past, it was not surprising that only two cases considered the simple past content pages to be the most important page for their task (260406, 120406).

One difficulty learners encountered was that the simple past content pages were found under the content title Continuous Forms, which was unexpected (120406) or only found after a thorough search (210406).

Overall, the navigational data confirmed subjects’ navigation along the CING structure from general topic area to individual pages, but in the interview few subjects commented on this aspect. Further research would be necessary to gather learner information
on the reason for a navigation along the CING which could explain the reason for this behavior and shed light on potential issues in the CING navigation paths.

These findings show that subjects mostly concluded IS successfully. If future learning contexts were designed with similar learning tasks as this study, learners’ information specification could turn out to be similarly successful.

Assessment of information relevance

As much as the learning task impacted learners’ Information Specification, it also informed their assessment of learning material relevance. Learners assessed the relevance of found pages via the content titles and the page content while the title’s key words (“present perfect”, “simple past”, “continuous” and “future”) also played an important role as indicator for relevant or irrelevant pages (“future” and “continuous”). Interestingly, those interviewees who only cited the word “future” as an indicator for page irrelevance often considered the word “continuous” to point to a relevant page (110406, 150506, 270406). This suggests a considerable lack of understanding of the grammar term “continuous” with more than one learner. As mentioned in the paragraph on Information Specification, this misunderstanding can likely contribute to the assessment of irrelevant CING pages as relevant and lead to unsuccessful learning task preparation.

Many interviews provided evidence that learners also assessed the type of material when choosing what to do in the CING. One subject (170206) considered the Discovery content pages to be most relevant to her learning because of the large number of examples and the comprehension check, while the majority selected the Explanation pages (080506, 120406, 190406, 210406) because of their topic overview (120406), rule focus (210406), and provision of the required explanation (110406). Some combined the Explanation with the Exercise pages (150506, 110406) or chose only Exercise pages (150506). Obviously, learners’ learning preference with or without rules, supported by a topic overview or by means of examples and comprehension check made a difference in page type selection. This means the CING could be applied as a learner specific learning tool that caters for different learner types. Further research on different learner types and their experience with the CING will be necessary to provide the right kind of support for the CING in such a specialized learning context.

Comments also indicated that the time restriction on the CING research session had an impact on learners’ CING usage. For example, one interviewee (080506) did not visit the

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71 With the exception of the learner who considered the pages on the continuous to be very relevant to learning about the present perfect.
Discovery pages because the time in the CING was too short, and another skipped the Exercise pages for the same reason (150506). These learners might have used these pages if more time in the CING had been allowed and thus, the CING log-file data have to be interpreted from a new viewpoint. In case a learner has not visited a page type this could have been due to time restriction rather than learning preference or an incorrect assessment of relevant information.

Understanding the CING’s Hypertext Structure

Content pages in a hypertext are part of the entire structure as they are interlinked to other pages. In order to find them a user has to understand the hypertext structure. As I already presented above some subjects incorrectly assessed the relevance of page titles to the grammar task at hand. This was confirmed by the interview data. The data also confirmed that some also had difficulties finding navigational tools (such as the back button) or tried to click the example of the Content Menu on the tool’s introduction page (170206). Such difficulties can have a considerable effect on the usage of the CING, particularly if they are proof that the hypertext structure of the tool is unclear to learners. Subjects’ recommendations for advisable paths through the CING shed more insight into this issue.

As support to navigating in the grammar the following recommendations were given by subjects. One learner only recommended the introduction page as source of support to choose the most relevant pages before using the Tense/Aspect menu. The majority of subjects suggested either the menu (Tense/Aspect) as the first step in the search for relevant pages (260406, 270406, 080506, 150506, 110406, 120406, 190406, 210406) or the Search option (260406, 080506, 150506, 110406, 120406, 190406). The interesting thing about this finding is that the Search option did not work at the time of the interview session, so none of the subjects could have used this form of navigation. They might have mentioned it as an advisable means of finding relevant pages because they would have used this option if it had been available.

Other navigation aids learners suggested for CING navigation included the Toplinks (170206, 260406, 080506, 200406), the links on top of each content pages to related close by topic pages (150506) and the back button (270406, 150506, 120406). Subjects also advised skipping irrelevant information (120406), orienting along the CING list of content pages (190406), and ensuring that the page visited is relevant (150506).

These results show that the CING’s non-linear, autonomy-requiring, and complex hypertext content structure was not impossible for learners to navigate in, and that they made
good use of the little guidance the tool provides in order to prepare for their learning task. They also show that misleading page titles led learners to visit pages irrelevant to the grammar test (150506, for instance, expected to find information on the SP under pages with Continuous in the title), thereby losing valuable time that could have been used to read relevant pages.

**Navigation in the Chemnitz InternetGrammar**

Asking learners about their idea of navigating in the CING and their actual navigation activities revealed two types of behavior. One type of navigation behavior is characterized by highly individualized page selection, which could be called a form of “risk taking.” Learners leave the context of content titles they see on one page (e.g., the Explanation Page Simple Past shows the neighboring page Past Continuous as well as the corresponding Exercise and Discovery pages) to search for other task-relevant pages not included in the previous page list. The other kind of behavior involves little risk taking with unknown titles in the CING. These learners follow the given CING sequence, using the topic list on the Select navigation page to select the next content page.

Overall, none of the learners left behind the CING Sitemap link sequences entirely which could have been done via, the History option, or Corresponding Pages. This shows that the CING supports learners’ navigation via its content structure overview (Sitemap) and enables learners to discover the content and test their own skills in information assessment. This can be important for a learner to get an overview over the larger structure of grammar and train his ability to separate the structures and terminology.

**Learners’ prior experience with the CING**

All except for two subjects confirmed that their previous experience with the CING had had a positive effect on their use of the tool. These subjects considered it to be responsible for their improved overview of the CING content (260406), for an improved understanding of the structure (270406, 200406, 210406), better orientation in the tool (190406), a quicker material search (110406). They also found the CING material to be more clearly arranged after using it for a while (260406, 080506, 150506). Thus the majority of learners found the CING structure easier to handle because of their prior CING experience, while one learner claimed to have had an easier time in the CING during the second session.
because she had improved her English language skills (vocabulary and grammar) since using it last (170206). This last response can be related to the research assumptions on the CING’s metalanguage, salience, and vocabulary. All learners’ experience with the CING might improve due to increased language skills, which I consider to be an important factor in successful CING usage along with a little prior experience with the tool to support navigation.

**Reported Problems and Potentials of the CING**

In addition to the issues mentioned above, learners also found the graphs on the *Explanation* pages to be overloaded and confusing (e.g., 150506); they attempted to click the *Select button* on the *Introductory page* (Appendix 10) which they erroneously took to be a link (080506). Others complained about the lack of content index (080506, 150506, 200406), a clear content structure (260406, 110406, 200406) that indicates where a certain topic page can be found (210406) or that provides suggestions about how to navigate (200406). One solution to the resulting disorientation seems to be careful reading of the pages (260406) and more time for CING work (210406). Another suggestion was to integrate the CING as reference tool into a classroom setting (190406) to avoid learner problems.

One subject (190406) said that the overwhelming amount of material contained in the CING made her unsure if she had missed anything during the visit and others found the CING material graphs to be unclear and overloaded with information (150506) or simply unstructured (120406).

Some subjects found the CING session time too short for task completion and felt they were not familiar enough with the CING (190406 and 080506) due to their lack of experience with the tool (110406). One subject also had trouble reading off the screen (080506).

Coming to positive aspects of the CING, quite a few interviewees expressed approval of the autonomous character of learning with the CING and its elements of discovery, which a number of subjects found useful for grammar learning (080506, 120406, 190406, 200406). The CING’s grammar graphs were not rejected by all subjects. One subject, welcomed the presentation of visualized grammar information as it helped her with her learning (200406).
5.3 Summary and conclusion

At the outset of this study, I identified the lack of learning support and search option, challenging authentic material, and its nature as a hypertext and autonomous-learning based tool as potential weaknesses of the CING. The findings supported the assumption that the CING feedback causes difficulties and is at the same time helpful to learners. They also showed that the CING material is not salient enough and that its' vocabulary is not completely understood by every learner. There are findings supportive of the CING as a grammar tool and findings that call for support, change or re-design of the tool. I will now summarize in detail the different findings: subject group profile and their grammar test results, the learner knowledge of English and English metalanguage (incl. CING topic titles), subjects' experience with the CING and the results of the interview sessions on all investigated aspects of learning grammar with the CING. This means to subsume the disadvantages and advantages of the CING and relate them to a possible future of the CING as a grammar tool.

The grammar pre- and post-test data indicated that learners improved their performance on a grammar gap-fill test by one point after having worked in the CING. The majority of learners had an intermediate level of English, had been primarily instructed in the language at school, and was more extrinsically than intrinsically motivated to learn and apply English grammar correctly. They had never used the CING before the research session.

Questionnaire data on learners’ comprehension of CING page titles showed that they understood most of the CING simple past and present perfect page titles, but that some page titles (e.g., Speech Time and Reference Time) were misunderstood, particularly if the titles lacked keywords relating to both topics. Correlations of learner profile information with title comprehension data showed that learners with a better knowledge of English understood more of the titles correctly. At the same time, the CING Simple Past content page includes clear topic keywords but was still visited by only a few subjects, regardless of their language level. The interview sessions helped to explain this finding, as learners stated that they would have never expected (or were surprised to find) the Simple Past page under the content link Continuous Forms.

The CING experience questionnaire revealed that the majority of subjects had a negative experience of autonomous learning with the CING, of the metalanguage in the tool’s grammar material, of its page titles, as well as of the language examples that failed to show grammar structures in a salient way. Half of the subject group had a negative experience of
the overall vocabulary in the language examples and about a third reported having a negative experience with the CING’s feedback. Correlations revealed a weak relation between English language level and learners’ experience with the CING’s vocabulary, content page titles, and metalanguage. The better the language level was, the better learners’ experience of these CING aspects could be. The same was found for learners’ CING title comprehension and their vocabulary experience.

The qualitative investigation revealed that learners’ material salience problems were due to fairly complex language examples, unclear grammar structures in the language examples, and overall misunderstanding of vocabulary.

Learners’ profile characteristics also related to their CING behavior during the research session. Overall, the subject group primarily visited task-relevant pages and only zero to three that were task-irrelevant. Correlations showed that learners with the most intensive English language instruction in their school education (i.e., English as major subject) visited more relevant pages. Learners with a better experience of the vocabulary, metalanguage, and language material salience visited more relevant pages while learners with a higher motivation needed less time for navigation or for reading the introductory page.

These results clearly show that the CING can cause comprehension problems. Some of the data even suggests that a better understanding of CING titles leads to increased learner problems with the CING feedback. On the other hand, learners who enjoy working with computers have a better experience of the CING feedback system. The qualitative interview data indicated that the system of feedback presentation made it hard for learners to relate the feedback to the exercise examples. This finding possibly relates to the correlation between a better level of CING title comprehension and feedback problems, as learners with an advanced level of a grammar may expect more specific feedback. More research is required to support this finding.

The qualitative interview data (Appendix G2) confirmed that learners applied their usual learning strategies when working in the CING. This shows that the tool does cater to learners’ usual learning behavior, although some reported normally using note taking in learning, which the CING does not support. The interview data showed that learners had the greatest difficulty with the CING’s unclear feedback, incomprehensible material, finding the back button, inability to leave a CING content area, and trouble reading the computer screen. These findings coincide with the quantitative data.

Despite these problems, learners’ behavior and interview comments showed that learners’ definitions of their learning goal were task-relevant (e.g., “improve my knowledge
of the simple past and present perfect”) and in two cases even specific to the subject’s own learning needs (e.g., “learn about topics that cause me problems”).

Assessment of the relevance of page contents took place in a task-oriented way, except when there was a misunderstanding of a page title. In those cases the assessment of the page’s task relevance took slightly longer or, in one case, failed.

Overall, navigation in the CING was task-relevant and mostly followed the existing content sequence. This made the complex and extensive hypertext content structure of the CING accessible to learners, several of who, however, suggested a search option to support this navigation. Subjects also considered the Tense/Aspect content menu point to be an important element in their navigation. This shows that the CING is challenging to learners but that many of them were able to rise to this challenge. According to the interview responses, prior experience with the CING eased navigation and content comprehension.

The interview data also revealed that some learners found their English language skills inadequate for understanding the feedback responses or the vocabulary in the language material. Suggested solutions included reading the information carefully and deducing the meaning of unknown vocabulary from the context, using a dictionary alongside future CING work, or having more time available for working in the CING. Subjects also mentioned careful reading as a solution to the disorientation that many of them experienced in the CING due to the lack of a clear content index and structure. While many had a negative experience of autonomous learning in the CING, the interviews showed that there were also learners who considered the autonomous, self-discovery learning in the CING to be a good way of working out the grammar themselves. A majority of subjects had a positive experience of the CING graphs.

In the following chapter I will discuss these findings in the context of applying the CING in a specific learning or teaching environment, and then turn to suggestions for ways to improve the CING in chapter 6.
6. Outlook

This study has shown that there are two sides to the CING: a research and discovery side and an generally well-received but imperfect usage side.

Due to the carefully designed, pedagogically influenced, instructions on how to use the rules and examples (on Explanation and Discovery pages) learners can engage in rule hypothesis building and confirmation activities or take individual discovery tours of the English language usage (particularly via the Discovery pages and the corpus search). Since both activities are considered integral parts of foreign language learning today (see Fandrych, 2010) the CING could be integrated easily into modern approaches to learning.

In view of linguistic grammar concepts the current version of the CING lacks the material design for an application in a functional, generative or cognitive approach to grammar teaching. The corpus search engine and the material design, however, turn the CING into a promising form of pedagogical grammar.

On the practical side, the CING fulfils its basic requirements of usability (see Rubin, 1994) in supporting learners’ grammar learning. It provides learners with material that enables them to realize their learning goal (in this case: improve their knowledge and application of the simple past and present perfect in English) and implement their own learning strategies in the tool (e.g., read up on rules, select material relevant to their task and learning goals). However, learners, especially those with a less advanced knowledge of English grammar, struggled with various aspects of the tool, as described at length in the preceding chapters.

In order to achieve real usability, as Rubin (1994) defines it, hypertext-learning environments have to be designed so that users find them accessible and even enjoyable. Only this kind of “comfort” enables “workers” in a complex learning environment to proceed undisturbed by disorientation or miscomprehension (Rubin, 1994, p.18). This makes it possible for beginners with some experience to use the tool confidently and with a positive attitude.
6.1 Limitations of the study

The most prominent limits of this study concern its grammar test design, the interview data, and study session constraints, all of which impacted the study findings:

- The grammar test results are not representative and as such are only tentative, as no control group was available.
- The interview results do not necessarily fully represent the reality of what learners did and said. Learners’ comments reflect their subjective impression of the tool at the time of the sessions and are directly related to the interview questions. They can thus not be assumed to be complete.
- The learner-centeredness of this study means that findings are only applicable to learning situations with the CING that are comparable to those in this investigation.
- The constraints (e.g., time restriction, no dictionary) in the research sessions obviously impacted learners’ behavior in the CING and cannot necessarily be equated with learners’ independent use of the tool under normal conditions.
- Research areas with a strong relation to the study context (e.g. learning the strategies for learning, motivation) were not further investigated. Therefore, it is was not possible to but what impact other areas then the investigated, have on learners in an autonomous CING learning context.

6.2 Directions for a future implementation

This study has identified noteworthy learning problems experienced by CING users as well as a number of areas calling for further research. Many of these issues relate directly or indirectly to a lack of support in the tool. Support measures are thus at the heart of my proposal for an amendment of the CING and its implementation in a blended learning approach (Kohn, 2006).

6.2.1 User familiarisation

A preparation session introducing new CING users to the tool could provide them with the opportunity to browse and discover the program’s content and structure. An instructor could introduce learners to the CING’s authentic language material, the different types of material,
the system of exercises, the navigational tools and content system, as well as the program tools (such as the Glossary). To work towards autonomous behavior in the CING, learners are best supported by tasks that make familiarization with the tool a path of discovery. For example, a comprehension task on selected authentic examples could ask learners to first translate the examples into their mother tongue and then relate their translation to the grammar structure and rule the example represented in the foreign language via a comparative grammar approach. Translation and deduction can give learners new insights into the differences and similarities of the language systems they are dealing with.

Similarly an instructor-facilitated discussion of the results of learners’ translations and articulations of grammar rules would also constitute a significant change in the learning environment, but could round off the autonomous CING work and give users the chance to ask questions or relate difficulties they experienced with the tool. Such a guided introduction could help CING users face the challenges posed by the authentic language materials and gain an understanding of how to apply the material in their own grammar learning.

6.2.2 Material support

To meet the needs of users with lower levels of language and grammar proficiency, I propose to expand CING content via a link to an online dictionary on the introduction page, and easier language examples that reflect the same grammatical concept and rule and still challenge the learner to discover how language structures are used in real life. A revision of the graphs and grammar models should accompany these adjustments to preserve the CING’s nature as a research and learner grammar. To explain further what a content page explains to the learner, the CING’s new design could also involve pop-up windows that contain relevant information on those aspects of the CING that have proven to be challenging for our subjects (e.g., graphs, metalanguage, vocabulary or content titles).

Alternatively, an instructor could use the challenges learners encounter in the CING as an occasion for applying a pedagogy that makes use of these challenges. Comprehension difficulties with authentic language materials, could be used by an instructor to construct exercises of deducing the unknown vocabulary from the context and finding instances of grammar rules in the sentences. These exercises need to ensure that the learner receives all the grammar and vocabulary support he or she needs. A group discussion of the findings would
further support learners’ comprehension of metalanguage and vocabulary and help them work successfully with demanding material.

In the present study, many learners neglected the pages on the simple past for different reasons. In an autonomous learning environment with the CING this can lead to knowledge gaps learners are unaware of. If learners were given the opportunity of completing knowledge-gap tests (similar to the CING exercises) at the beginning of content pages or topic areas (e.g., *Simple Past, Perfect Forms*), this would provide them with feedback on their skills and existing knowledge gaps. This feedback could form the basis for an instructor-guided session focusing on learners’ knowledge gaps. But even without an instructor, these “awareness tests” would help learners navigate and use the CING in a way that is more focused on their actual learning needs.

### 6.2.3 Content and hypertext support

This study found that the title miscomprehension and difficulties with the CING’s hypertext content structure led to task-irrelevant navigation behavior and page use. Renaming the title *Simple and Continuous Forms*, for instance, would reflect all structures subsumed under it.

The content links/titles that subjects had a difficult time understanding (e.g., *Speech Time and Reference Time*) could be replaced by clearer terminology or supported by comprehension aids, such as the above mentioned “hovering” pop-up windows. When the cursor moves over the link, a small pop-up window could explain the term or related terms in a few words.

These are simple amendments that have the potential enhance learners’ goal-oriented navigation in the CING hypertext and improve information specification, leading to a more task-relevant selection of content pages.

### 6.4 A framework for implementation: *Blended Learning*

Many of the improvements suggested above involve an instructor. The idea is not for the instructor to continuously accompany learners in their CING work. Traditional teacher-guided instruction could rather be combined with new approaches to teaching and learning with multimedia and e-learning. This combination is called *blended learning* (Kohn, 2006) and involves phases in which an instructor is present and phases of self-guided e-learning. The classroom phases allow learners to get to know each other and the learning environment, to
acquire knowledge through presentations, discussions, and exchanging experience, while the e-learning phases focus on knowledge acquisition in the form of self-controlled, individual, and co-operative learning (Günther, 2006).

Kohn (2006) lists a set of factors that are essential for achieving a pedagogically sound form of blended learning in foreign-language acquisition:

- learner autonomy with gradually increasing personal responsibility and self-guidance (Benson, 2001)
- authentic materials that relate to the learners’ real-life world and communicative situations (Widdowson, 2003)
- a communicative/interactive focus of language learning; collaborative learning in groups (Rüschoff, 1999)

These factors correspond to the theory of constructivist language learning (see Bruner, 1990; Reinfried, 2000), which focuses on autonomous activity, authenticity, and cooperation. Haddad and Draxler (2002) argue that technology in today’s education is less a surrogate to traditional schooling than a closely integrated element capable of enhancing and completing existing models. Traditional language teaching models (such as those based on drill and practice tasks selected by the instructor) do not help learners acquire problem solving and learning strategies, which is why they are being supplemented or replaced by models involving active learning.

This form of active learning through tasks then developed into what is called a constructivist approach to language learning. It views learning as a combination of “information gathering and knowledge processing” while there is constant interaction between previously acquired knowledge (of e.g. vocabulary, grammar) and new information gathered which finally leads to acquisition and possibly the production of new knowledge (language) (Rüschoff, 1997, p. 83).

Among other important principles (e.g. socially negotiated construction of meaning, learning as an autonomous process), constructivist learning approaches stress that learning is a “process which must be supported by a rich learning environment rooted in real life and authentic situations” (Rüschoff, 1997, p. 83). Furthermore, constructivist learning focuses on the learners who construct their new knowledge actively on the basis of their own and newly acquired knowledge (c.f. Bruner, 1990). Nowadays, constructivist language learning is
especially prominent in activity theoretical approaches that have proven successful in e.g. university language learning environments (Blin, 2005).

In order for the CING to be successfully integrated into a more constructivist learning approach, course developers and instructors in, for example, blended learning environment must consider and integrate these factors. Reinmann-Rothmeier and Mandl (2001) outline six features that are central to the learning process:

- the independent and active involvement of the learner (active construction)
- the integration of acquired knowledge into existing knowledge structures and its interpretation on the basis of these structures and prior experiences (constructive process)
- the experience of positive emotions such as joy during learning. Negative emotions such as anxiety have a negative influence on the learning experience (emotional process)
- learners plan, control, and observe their learning process (self-controlled process)
- interaction with others (social process)
- situation and context specificity (situative process)

Günther (2006), proposes translating these features into an actual blended learning situation by dividing the situation into four contexts (authentic, multiple, social, and instructional). In a combination of construction by the learner and instruction by the teacher, these four contexts can constitute a positive learning environment which leads to different competencies in learners (such as self-control, media proficiency, co-operation with other learners, etc.) (see Günther, 2006).

In a blended learning situation, learners are given realistic problems to solve in the form of authentic tasks. Learning content is presented from different viewpoints in order to support the “non-situative acquisition of knowledge” that can later be transferred to other situation specific contexts and developed further in a flexible fashion (see Günther, 2006). Complex problems are solved in co-operation with others in the learner group in order to consolidate knowledge and to develop social competencies (Günther, 2006, p. 6). A teacher guides and supports the authentic tasks and group processes (Günther, 2006, p. 8).

The CING already provides authentic learning materials and gives users the opportunity to develop their media competencies as they navigate the tool’s hypertext
structure. In the following I sketch a proposal for enhancing the CING with instructor support and multiple and social contexts.

6.5 The Chemnitz InternetGrammar in a Blended Learning scenario

The CING aids learners in their active construction by providing material that challenges them to construct grammar knowledge on their own (such as through deduction from the Discovery content). In order to round out the learning experience, a teacher should be present to facilitate the emotional, social, and situative processes as well as supporting learners in their construction.

In the following I take the examples of particular usage issues to illustrate aspects of a possible blended learning scenario in English language instruction that includes the CING for English grammar acquisition. Since every learning situation, learner group, and instructor is different and will benefit from different approaches, this framework should be treated as a tentative suggestion rather than a ready-to-use solution.

In a first phase, an instructor introduces the CING to learners and assigns an overall learning task (e.g., “Prepare yourself for a test on the correct usage of the present perfect and the simple past”). The instructor also presents a set of sub-tasks to focus learners’ attention on the authentic language materials (e.g., a) “Translate the first three language examples on the Simple Past content page and make notes of the difficulties you experience, b) “Formulate an explanation of how each language example demonstrates the rule presented at the top of the page”), an exemplary grammar graph (accompanied by instructions such as: “Formulate in your own words a rule for the information presented in the grammar graph on the Use of Perfect content page”), and exercises with the feedback system (e.g., “Complete the exercises on the Present Perfect 2 content page and describe in your own words what information the feedback provided you with and what this means for your future learning activities”). The instructor reminds the students to keep the overall learning task in mind as they perform these tasks, which are carried out individually. The subsequent discussion of results c) covers what problems learners are encountering in the CING, what questions remain unanswered, and how these issues can be overcome. This can be an ongoing process that leads from instructor-guided tasks to autonomous behavior, to knowledge, to new tasks -- all guided by an overall learning goal (e.g., such as in this study: Prepare for an exam on the SP and PP) on which all steps in the process must be focused. The following remains very vague Subsequent sessions
could be informed by the results of this first phase to make the CING as clear to learners as possible. Instructors and course coordinators, who also design the tasks and set learning goals, would have to decide in what way cooperative and collaborative learning would be applicable in the subsequent online phases. They would also have to ensure that learners have the requisite cognitive learning strategies of retrieving, processing, and using information (in the CING or in the learning scenario in general), as well as metacognitive strategies of planning, observing, and evaluating their learning processes and motivational strategies (Günther, 2006)

Additionally, learners’ ability to use the technology for research and the learning task needs to be ensured or developed. For one, this includes hypertext navigation skills that make use of all navigation tools. In the CING these are the Select Button, the Corresponding Pages links, the links to neighboring content pages and the Sitemap. A learner needs to understand their meaning for navigation and for content search. Finally, cooperative learning strategies relating to the communication and interaction in a group towards the successful solution of the learning task should be introduced to and practiced with learners. These requirement factors, as Günther (2006) calls them, should be integrated into the introduction and online phase in order for the blended learning scenario to be successful. In addition to work in the CING, a blended learning scenario would also include offline communicative exercises, listening comprehension, writing tasks, and reading exercises.

While more research is needed to test this model and these suggested improvements to the CING, it is my conclusion from all of the above that a future application of the CING can be conducive to learning. Enhancing its material and/or integrating it into a blended learning scenario can make it an even more useful tool, freely accessible to all users with an Internet connection. There is no doubt that use of the CING, especially in a blended learning context can develop learners’ hypertext and autonomous learning skills along with their knowledge of grammar.

6.6 Final Summary

The aim of this study was to understand usage behavior with a new form of technology in language learning, the Chemnitz InternetGrammar (CING). Research has established that such learning technologies require new forms of learning; this investigation has found that CING users might require further assistance in preparing for these new forms.

There is no doubt that the CING, overall, functions as a satisfactory learning tool, which in many cases leads to learning success even without a separate introduction to users.
The findings presented in this study, however, can be used as a basis for further development and improvement of the program as well as its integration into a more comprehensive learning environment.

The CING’s authentic language material and its deductive and inductive grammar content make it compatible with the constructivist approach. At the same time, the content structure and navigational tools can lead to problems when using the CING.

This study has shown that all of these aspects can cause problems to learners. I have thus put forward a number of suggestions for further development to make the CING an even more adaptable and more successful application in language education. A significant conclusion of this study is that instructor support would significantly improve the CING learning experience for users. Implementing these suggestions could upgrade the CING from a restricted research tool to an innovative, successful learning technology that can support most current forms of hybrid teaching approaches. It thus would have the potential to become a vital part of today’s globalized and mobile learning landscape.
References


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<th>Year</th>
<th>Publisher</th>
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Nagata, N. (2002). Multiple-choice vs. production exercises based on the BANZAI parser. Presentation at the ACTFL Annual Conference, Salt Lake City, Utah.


Appendix A1: Learner profile questionnaire (second version, Dec 2005)

Descriptive Statistics

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Question 2)

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Question 3)

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Question 4)

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Question 5)

**Length of English instruction at school**

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Question 6a)

**Exp. with English Language Exchange**

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Question 6b)

**Type of language exchange**

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<td>Betw. 6-12 months: Work/ Au Pair</td>
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Question 7a)

**Last English Exam**

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Question 7b)

**Engl. language exam results (Placement Test)**

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**Question 8)**

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**Question 9)**

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</thead>
<tbody>
<tr>
<td>very much</td>
<td>15</td>
<td>27,3</td>
</tr>
<tr>
<td>like</td>
<td>22</td>
<td>40,0</td>
</tr>
<tr>
<td>sometimes</td>
<td>18</td>
<td>32,7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

**Question 10a)**

<table>
<thead>
<tr>
<th>Net Usage: eMail, ecards, Weblogs</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>19</td>
<td>34,5</td>
</tr>
<tr>
<td>often</td>
<td>19</td>
<td>34,5</td>
</tr>
<tr>
<td>sometimes</td>
<td>13</td>
<td>23,6</td>
</tr>
<tr>
<td>not often</td>
<td>3</td>
<td>5,5</td>
</tr>
<tr>
<td>almost never</td>
<td>1</td>
<td>1,8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

**Question 10b)**

<table>
<thead>
<tr>
<th>Net Usage: Online Library Catalogues (e.g. WebOpac)</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>1</td>
<td>1,8</td>
</tr>
<tr>
<td>often</td>
<td>7</td>
<td>12,7</td>
</tr>
<tr>
<td>sometimes</td>
<td>12</td>
<td>21,8</td>
</tr>
<tr>
<td>not often</td>
<td>15</td>
<td>27,3</td>
</tr>
<tr>
<td>almost never</td>
<td>20</td>
<td>36,4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>
Question 10c)

**Net Usage: Ebay, online Shopping**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>4</td>
<td>7,3</td>
</tr>
<tr>
<td>often</td>
<td>16</td>
<td>29,1</td>
</tr>
<tr>
<td>sometimes</td>
<td>7</td>
<td>12,7</td>
</tr>
<tr>
<td>not often</td>
<td>12</td>
<td>21,8</td>
</tr>
<tr>
<td>almost never</td>
<td>16</td>
<td>29,1</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Question 10d)

**Net Usage: Last Minute Travel, Events/ Tickets**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>5</td>
<td>9,1</td>
</tr>
<tr>
<td>often</td>
<td>20</td>
<td>36,4</td>
</tr>
<tr>
<td>sometimes</td>
<td>18</td>
<td>32,7</td>
</tr>
<tr>
<td>not often</td>
<td>8</td>
<td>14,5</td>
</tr>
<tr>
<td>almost never</td>
<td>4</td>
<td>7,3</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Question 10e)

**Net Usage: Scientific Net-Search**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>very often</td>
<td>1</td>
<td>1,8</td>
</tr>
<tr>
<td>often</td>
<td>10</td>
<td>18,2</td>
</tr>
<tr>
<td>sometimes</td>
<td>19</td>
<td>34,5</td>
</tr>
<tr>
<td>not often</td>
<td>17</td>
<td>30,9</td>
</tr>
<tr>
<td>almost never</td>
<td>8</td>
<td>14,5</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Question 11)

**Extrinsic Motivation: Success in Grammar Course**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>very important</td>
<td>32</td>
<td>58,2</td>
</tr>
<tr>
<td>important</td>
<td>20</td>
<td>36,4</td>
</tr>
<tr>
<td>partly important</td>
<td>3</td>
<td>5,5</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0</td>
</tr>
</tbody>
</table>
Question 12)

**Intrins. Motivation: Gramm. Correct Language with NS friends**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>very important</td>
<td>17</td>
<td>30,9</td>
</tr>
<tr>
<td>important</td>
<td>26</td>
<td>47,3</td>
</tr>
<tr>
<td>partly important</td>
<td>11</td>
<td>20,0</td>
</tr>
<tr>
<td>unimportant</td>
<td>1</td>
<td>1,8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

Question 13)

**ST and RT**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>correct</td>
<td>38</td>
<td>69,1</td>
</tr>
<tr>
<td>incorrect</td>
<td>17</td>
<td>30,9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

**Use of the Perfect**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>correct</td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

**Other Wh-Forms**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>correct</td>
<td>54</td>
<td>98,2</td>
</tr>
<tr>
<td>incorrect</td>
<td>1</td>
<td>1,8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

**Background and Foreground**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>correct</td>
<td>47</td>
<td>85,5</td>
</tr>
<tr>
<td>incorrect</td>
<td>8</td>
<td>14,5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

**Change of Meaning**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>correct</td>
<td>50</td>
<td>90,9</td>
</tr>
<tr>
<td>incorrect</td>
<td>5</td>
<td>9,1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>

**Present Perfect 1**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>correct</td>
<td>54</td>
<td>98,2</td>
</tr>
<tr>
<td>incorrect</td>
<td>1</td>
<td>1,8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100,0</strong></td>
</tr>
</tbody>
</table>
With the selection of CING titles for allocation we did not want to measure learners’ overall performance in allocation titles, but explore which titles presented learners with the most problems to allocate correctly. For this reason the list of titles is not 50% correct and 50% incorrect Simple Past (SP) and Present Perfect (PP) titles. We aimed at a combination of titles (belonging to the SP/PP or not) that clearly hinted at their content pages with those titles that were more ambiguous (Background and Foreground).
Question 14a)

**Former CING Experience**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>3</td>
<td>5,5</td>
</tr>
<tr>
<td>no</td>
<td>52</td>
<td>94,5</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Question 14b)

**Former CING work- how often?**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No answer</td>
<td>52</td>
<td>94,5</td>
</tr>
<tr>
<td>once</td>
<td>3</td>
<td>5,5</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>100,0</td>
</tr>
</tbody>
</table>
Appendix A2: Grammar test results (first version, Dec 2004)

Simple Past/Present Perfect: Dec 2004 Statistics

Item Difficulty and Power of Discrimination Dec 2004

Mean value of selected items

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean value (MW)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item-1</td>
<td>1.07</td>
<td>.203</td>
</tr>
<tr>
<td>Item-2</td>
<td>1.39</td>
<td>.490</td>
</tr>
<tr>
<td>Item-4</td>
<td>1.45</td>
<td>.500</td>
</tr>
<tr>
<td>Item-5</td>
<td>1.35</td>
<td>.480</td>
</tr>
<tr>
<td>Item-13</td>
<td>1.35</td>
<td>.480</td>
</tr>
<tr>
<td>Item-14</td>
<td>1.54</td>
<td>.501</td>
</tr>
<tr>
<td>Item-16</td>
<td>1.67</td>
<td>.474</td>
</tr>
<tr>
<td>Item-20</td>
<td>1.23</td>
<td>.424</td>
</tr>
<tr>
<td>Item-21</td>
<td>1.61</td>
<td>.490</td>
</tr>
<tr>
<td>Item-24</td>
<td>1.57</td>
<td>.497</td>
</tr>
<tr>
<td>Item-25</td>
<td>1.89</td>
<td>.316</td>
</tr>
<tr>
<td>Item-33</td>
<td>1.18</td>
<td>.383</td>
</tr>
</tbody>
</table>

Table 1<sup>72</sup>: Mean value of all (MW) selected test-items (Simple Past/Present Perfect) Dec 2004

Discriminatory power of items

<table>
<thead>
<tr>
<th>Item</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item-1</td>
<td>.000</td>
</tr>
<tr>
<td>Item-2</td>
<td>.000</td>
</tr>
<tr>
<td>Item-4</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-5</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-11</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-14</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-16</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-20</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-21</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-24</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-27</td>
<td>1.00</td>
</tr>
<tr>
<td>Item-31</td>
<td>1.00</td>
</tr>
<tr>
<td>Total</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 2<sup>73</sup>: Discriminatory power of all test items Dec 2004

---

<sup>72</sup> December 2004: Unusable items are marked red, all acceptable items marked brown and good values are marked blue.

<sup>73</sup> December 2004: Unusable items are marked red, all acceptable items marked brown and good values are marked blue.
Appendix A3: CING navigation logfiles (Dec 2005)

General Statistics

<table>
<thead>
<tr>
<th>Nr. of participants</th>
<th>Mean</th>
<th>Standard Deviation (SD)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nr. of lost logfiles</td>
<td>167,62</td>
<td>137,925</td>
<td>4</td>
<td>484</td>
</tr>
<tr>
<td>Number of relevant pages visited</td>
<td>45</td>
<td>4,391</td>
<td>10</td>
<td>484</td>
</tr>
<tr>
<td>Number of irrelevant pages visited</td>
<td>45</td>
<td>3,588</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Time spent on intropage</td>
<td>45</td>
<td>670,889</td>
<td>0</td>
<td>2286</td>
</tr>
<tr>
<td>Total time spent on relevant pages</td>
<td>45</td>
<td>3,588</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Total time spent on irrelevant pages</td>
<td>45</td>
<td>589,040</td>
<td>0</td>
<td>1985</td>
</tr>
<tr>
<td>Total time spent on navigation</td>
<td>45</td>
<td>260,432</td>
<td>0</td>
<td>1554</td>
</tr>
<tr>
<td>Total steps needed for navigation</td>
<td>45</td>
<td>18,968</td>
<td>0</td>
<td>90</td>
</tr>
</tbody>
</table>
Appendix A4: Development of Pre- and post-test items (June 2005)

“Item difficulty” and “Power of discrimination”

Calculation of value of discriminatory power (r) June 2005

<table>
<thead>
<tr>
<th>Spearman Rho</th>
<th>Correlation</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item1</td>
<td>Correlation</td>
<td>-.077</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.712</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item2</td>
<td>Correlation</td>
<td>-.146</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.677</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item3</td>
<td>Correlation</td>
<td>-.179</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.563</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item4</td>
<td>Correlation</td>
<td>-.180</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.549</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item5</td>
<td>Correlation</td>
<td>.114</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.564</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item6</td>
<td>Correlation</td>
<td>.203</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.701</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item7</td>
<td>Correlation</td>
<td>-.130</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.239</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item8</td>
<td>Correlation</td>
<td>.194</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.322</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item9</td>
<td>Correlation</td>
<td>-.130</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.009</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Item10</td>
<td>Correlation</td>
<td>.282</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.147</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Discriminatory power of all test items June 2005

Calculation of Test-Item Difficulty June 2005

<table>
<thead>
<tr>
<th>Nr. of subjects</th>
<th>Mean Value ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item1</td>
<td>28</td>
</tr>
<tr>
<td>Item2</td>
<td>28</td>
</tr>
<tr>
<td>Item3</td>
<td>28</td>
</tr>
<tr>
<td>Item4</td>
<td>28</td>
</tr>
<tr>
<td>Item5</td>
<td>28</td>
</tr>
<tr>
<td>Item6</td>
<td>28</td>
</tr>
<tr>
<td>Item7</td>
<td>28</td>
</tr>
<tr>
<td>Item8</td>
<td>28</td>
</tr>
<tr>
<td>Item9</td>
<td>28</td>
</tr>
<tr>
<td>Item10</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 2: Mean Value for Pre-/Post-test June 2005

June 2005: Unusable items are marked red, all acceptable items marked brown and good values are marked blue.
Appendix A5: Adapted extraction rules for transcript information retrieval

Examples

a) If possible, extract the smallest meaningful phrase (that answers the question in parts/fully) in literal form.

**Original transcript information**

(Answer to Question 4/1\textsuperscript{75}): *Ja, [und woran lag das?] wie ich schon vorhin gesagt hab, jetzt durch die Übung auch während des Semesters [Übungen in der englischen Grammatik oder mit der InternetGrammar?] mit der Grammatik [also in deinen Sprach- und Grammatikkursen?] ja genau [gab es noch andere Gründe]*

**Extracted information**

*Ja; durch die Übung […] mit der Grammatik*

1) Interviewees might use different terms for aspects in the CING or their description of their learning and problems, note down all terms used (as basis for Processing).

**Original transcript information**

(Answer to question 4/4a\textsuperscript{76}): *Ich habe mir den Bildschirm durchgelesen und dann habe ich mir halt im Content Menu die Tense herausgesucht und eben das Present Perfect…*  
Following this rule, we first of all noted down the term “Bildschirm” which did not clearly show that the subject wanted to say. Later (an examination of the subjects CING behavior via video tape helped us to understand what she meant; see 6.)

**Extracted information**

*Ich habe mir die Introduction-Seite durchgelesen…*

\textsuperscript{75} Du hast schon ein bisschen Erfahrung mit der CING: War die heutige Arbeit mit dem Programm einfacher für Dich, als im Dezember 2005? Warum?  
\textsuperscript{76} Kannst Du dich erinnern und mir genau erklären, was du heute in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen?
2) Some of our theoretical constructs overlap, therefore content material that is relevant to one information category can be similarly relevant to a second (take notes where necessary).

Original transcript information
(Question 4/5c)
...also ich bin dann hier auf Perfect Forms, denn Continuous denk ich weiss ich, dass dann immer –ing dranhängt, z.B. dann bin ich halt auf das Perfect, welches Problem war es? Present Perfect, bin ich dann aufs Present und dann Use- und dann wollt ich die einzelnen Seiten bearbeiten [komplett oder nur Teile?] ja komplett von oben nach unten

Extracted information
Clearly, there is more than one type of information in this answer. First of all, the answer explains to us, how the subject ruled out irrelevant pages Perfect Forms, denn Continuous denk ich weiss ich, dass dann immer –ing dranhängt (Information for question 4/5c) in her search (we later included her answer to question 4/8 which clearly states that the Continuous is an irrelevant topic for her CING work, see 7), then it entails information on how she selects pages for her work in the CING welches Aufgabenproblem war es? (this information is also related to our construct of “Specification of Information Goal”, Question 4/4a) and finally we find information on how she works with the found information (und dann wollt ich die einzelnen Seiten bearbeiten [...] komplett von oben nach unten) which shows us her learning strategy (Question 4/7).

3) For the extraction of information on learners’ navigation or if information is contradictory, verify it with the help of the CING-behavior tape if possible.

Original transcript information
(Answer to question 4/4a): Ich habe mir den Bildschirm durchgelesen und dann habe ich mir halt im Content Menu die Tense herausgesucht und eben das Present Perfect...

---

77 Woran erkennst Du, dass diese Seite relevant für deine Aufgabenbearbeitung ist?
78 Kannst Du dich erinnern und mir genau erklären, was du heute in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen?
Through verification of the subject’s CING behavior on tape, we could determine that the term “Bildschirm” is in this case synonymous for the subject’s reading of the introductory page the CING presents first upon entering. The other terms in this answer match the terms used in the CING.

**Extracted information**

_Ich habe mir die Introduction-Seite durchgelesen…_

In other answers (Question 4/11a) the subject uses the term “Startseite”, which is also synonymous for introductory page. Only later, during the step of _Generalisation_ did we generalise all these terms to one.

4) If information from other answers, interviewer notes and the CING-behavior tape does not help to allocate the content material, separate it out for further discussion.

Due to our rigid interview structure with pre-set questions, this case was not often represented in the transcripts. In spite of the allocation of information to several categories, answers were overall fairly focused on already established questions/categories. However, due to individual differences between the subjects, there was one situation\(^{79}\) were information had to be separated out for further discussion and was not allocated.

**Original transcript information**

(Answer to Question 4/10) _Ja, also das übliche, daß ich am Bildschirm nicht so gut lesen kann_  
The relevance of this answer to our category of CING problems (Question 4/10 etc.) is clearly shown, but it was the only CING problem of its kind, so it needed to be separated for further discussion.

---

\(^{79}\) This text example was taken from a different transcript than the other examples.
Appendix A6: Pre- and post-test results (Dec 2005)

Descriptive Statistics

![Pre-test Descriptive Statistics](chart1)

![Post-test Descriptive Results](chart2)
Boxplot for Pre- and Post-test Results

T-Test for Pre- and Post-test

<table>
<thead>
<tr>
<th>Pairs</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Standard mistake of median</th>
<th>95% Intervall of confidence of the difference</th>
<th>T</th>
<th>df</th>
<th>p=Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest Result-Posttest Result</td>
<td>-1.000</td>
<td>1.743</td>
<td>.235</td>
<td>-1.471 - .529</td>
<td>-4.256</td>
<td>54</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 1: T-Test for paired samples (Pre- and Post-test)
Appendix A7: CING experience questionnaire results (Dec 2005)

Descriptive Statistics

For this calculation, all statements were recoded to statements with a positive attitude towards the overall category. To be able to calculate all categories as one variable each, the subcategory-answers were added, the mean value for each learner and the individual categories calculated. The mean value for each learner and category was then turned into a full number by rounding.

Mean Values and Standard Deviation for all categories

<table>
<thead>
<tr>
<th>Vocab</th>
<th>Feedback</th>
<th>Metalanguage</th>
<th>Titles</th>
<th>Autonomy</th>
<th>Salience</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Mean</td>
<td>2.56</td>
<td>2.95</td>
<td>2.15</td>
<td>2.20</td>
<td>2.18</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>.996</td>
<td>1.145</td>
<td>.780</td>
<td>.951</td>
<td>.925</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.700</td>
</tr>
</tbody>
</table>

Table a: Mean Values and Standard Deviation for all categories (CING-Exp. Questionnaire)

Table 1: Salience of Material
Table 2: CING – Vocabulary

<table>
<thead>
<tr>
<th></th>
<th>don't agree at all</th>
<th>don't agree</th>
<th>partly agree</th>
<th>agree</th>
<th>totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>6</td>
<td>16</td>
<td>12</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>10,91%</td>
<td>46,45%</td>
<td>21,82%</td>
<td>26,0%</td>
<td>0.46%</td>
</tr>
</tbody>
</table>

Table 3: Feedback

<table>
<thead>
<tr>
<th></th>
<th>don't agree at all</th>
<th>don't agree</th>
<th>partly agree</th>
<th>agree</th>
<th>totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback</td>
<td>6</td>
<td>16</td>
<td>17</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>6,09%</td>
<td>29,09%</td>
<td>30,91%</td>
<td>20,0%</td>
<td>0.91%</td>
</tr>
</tbody>
</table>
Table 4: Metalanguage

<table>
<thead>
<tr>
<th>Agreement Level</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't agree at all</td>
<td>11</td>
<td>30.0%</td>
</tr>
<tr>
<td>Don't agree</td>
<td>27</td>
<td>77.27%</td>
</tr>
<tr>
<td>Partly agree</td>
<td>2</td>
<td>5.45%</td>
</tr>
<tr>
<td>Agree</td>
<td>4</td>
<td>9.09%</td>
</tr>
</tbody>
</table>

Table 5: CING - Titles

<table>
<thead>
<tr>
<th>Agreement Level</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't agree at all</td>
<td>15</td>
<td>27.27%</td>
</tr>
<tr>
<td>Don't agree</td>
<td>19</td>
<td>34.55%</td>
</tr>
<tr>
<td>Partly agree</td>
<td>16</td>
<td>29.09%</td>
</tr>
<tr>
<td>Agree</td>
<td>5</td>
<td>9.09%</td>
</tr>
</tbody>
</table>

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Table 6: Autonomy

<table>
<thead>
<tr>
<th>Autonomy</th>
<th>don't agree at all</th>
<th>don't agree</th>
<th>partly agree</th>
<th>agree</th>
<th>totally agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14</td>
<td>23</td>
<td>17</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>25.45%</td>
<td>38.18%</td>
<td>30.91%</td>
<td>3.64%</td>
<td>1.62%</td>
</tr>
</tbody>
</table>
Appendix B1: Grammar test (first version, June 2005)

Bitte trage deinen vollständigen Namen in die obere Box. Bearbeite alle Sätze und setze die entsprechenden richtigen Verbformen (der Infinitive in den Klammern) ein. Du hast 15 min Zeit für diesen Test.

6) (Item 33) Eliah (stop) ___________ for a second, then (turn) ___________ around and with all his might he (kick) ___________ the door open. We couldn’t believe it.

7) (Item 2) The McCormacks (visit) _____________________ the Czech Republic for the first time, when their daughter was working for a company in Plzen.

8) (Item 5) No thanks, I (already eat) ________________________ enough today.

9) und 5) (Items 13 und 14) On his many voyages around the world, Captain James Cook (establish) ________________ many colonies throughout the Pacific, many of which (gain) _____________________ their independence up to the current day.

6) (Item 16) “I think that the party this evening (do) ___________ you a world of good”, he said softly when they went home afterwards.

7) (Item 21) Mr McKency started his business when he was 20 and (provide) ______________________ us with the best materials ever since.

8) (Item 1) While her parents and sisters were sleeping she quietly (enter) - __________________ the house from the back and collected all the things she had forgotten last time.

9) (Item 4) Dr Jones said: ‘It would be wrong to say I invented the machine. It (be) __________________ around for at least 60 years.

10) (Item 24) The company (establish) _________________ the communication system to enable the old people now living in the compound to call for help immediately from every room. It is working really well now.

Wenn du den Test beendet hast, lege das Blatt bitte mit dem Text nach unten rechts neben deine Tastatur! Danke!
Bitte trage deinen vollständigen Namen in die obere Box. Bearbeite alle Sätze und setze die entsprechenden richtigen Verbformen (der Infinitive in den Klammern) ein. Du hast 15 min Zeit für diesen Test.

10) (Item 33) Gascoigne (stop) _____________ for a second, then (turn) _____________ around and with all his might he (kick) __________ the ball into the goal - Glory for the England of the early 90’s.

11) (Item 2) The McCormacks (visit) ___________________ the Czech Republic for the first time, when their daughter was working for a company in Plzen.

12) (Item 5) No thanks, I (already eat) __________________ enough today.

13) und 5) (Item 13 and 14) On his many voyages around the world, Captain James Cook (establish) ______________ many colonies throughout the Pacific, many of which (gain) __________________ their independence up to the current day.

1) (Item 16) “I think that the party this evening (do) __________ you a world of good”, he said softly when they went home afterwards.

2) (Item 21 ) Mr McKency started his business when he was 20 and (provide) ________________ us with the best materials ever since.

3) (Item 1) While her parents and sisters were sleeping she quietly (enter) ________________ the house from the back and collected all her things.

4) (Item 4) Dr. Jones said: "It would be wrong to say I invented the machine. It (be) __________________ around for at least 60 years.”

5) (Item 24) The company (establish) ________________ the communication system to enable the old people now living in the compound to call for help immediately from every room. It is working really well now.

Wenn du den Test beendet hast, lege das Blatt bitte mit dem Text nach unten rechts neben deine Tastatur! Danke!
Appendix C1: Preparation of research sessions (Dec 2005)

Instructions for research session assistants

Steps to have all sessions are followed in the same way.

b) Fordere alle Studenten in deinem Pool auf, den Raum zu verlassen.

c) Zähle die funktionierenden Computer! (Bildschirm-Check!)

d) Nenne die Anzahl der funktionierenden Computer an die Studenten-Organisatorin im 3. Stock (Treppe)

e) Nehme die Box, schreibe Poolraum und dein Kürzel darauf, verteile die Testblätter (1 gelb oben, 1 grün unten), mit dem Text nach unten, rechts neben die Computerbildschirme. Bevor die Studenten in den Pool kommen.

f) Verteile die Instruktionsblätter an alle (funktionierende) Computerplätze* (Text nach unten) neben/auf die Tastaturen.

g) Setze alle Computer auf Windows (Computer „Neu Starten“, Warten bis „Auswahl Linux/Windows“ erscheint, „Windows“ wählen)

h) Schreibe meine eMail-adresse an die Tafel: isabel.heller@phil.tu-chemnitz.de (für den Beratungstermin im Januar)

i) Drehe das Schild an der Pooltüre um! („Hier findet eine Veranstaltung statt!“)

j) Dein DIN A4 Blatt: falte es in den Kartenschlitz an der Pooltüre (hält die „blinden“ Studies davon ab, den Pool zu betreten)

k) Anzahl der möglichen Studies werden Dir in den Pool geschickt.

l) Alle sitzen: Instruktion beginnt: (z.B. Nehmt das Blatt neben/auf der Tastatur.)

m) Vorlesen der Instruktion etc. (immer Ruhe während der Sitzung)

n) Bei Schritt 1, 3, 4 (Frageb. 1, CING Arbeit, Frageb. 2) am Besten hinten im Poolraum stehen und die Bildschirme im Blick halten (Überblick was Studenten tun, Schummeln sofort unterbinden!!).

o) Bei Schritt 2 und 5 (Vor- und Nachtest) im Poolraum auf und ab gehen, damit du Überblick hast, was die Leute tun. Schummeln sofort unterbinden!!

p) Hilfe bei technischen Problemen, notieren wenn diese mit der CING zusammenhängen (Login etc)

q) Tests erst ENDE der Sitzung einsammeln, -> Schummel-Check
Appendix C2: Introduction information for the research sessions (Dec 2005)

Information for students

Am 1. Dezember wird eure Vorlesung in den Computerpools der RH 70 stattfinden und von mir organisiert. Damit jeder weiß, was dort passiert, gebe ich Euch jetzt einige Informationen über diese Sitzung. Sie ist besonders relevant für euch, da sie, wie die Tutorials zu dieser Vorlesung, die praktische Anwendung der Vorlesungsinhalte ermöglicht.


In dieser Sitzung könnt ihr das Wissen aus den Vorlesungen zu Morphologie und Morphosyntax/Syntax einsetzen, um die Arbeit an dem Sprachlehrmittel Chemnitz InternetGrammar (CING) durchzuführen. Das Programm wurde von Mitarbeitern der Englischen Sprachwissenschaft erarbeitet und steht kurz vor der Vollendung, die jedoch noch eine genaue Beurteilung durch Anwender wie Euch benötigt. 2, speziell für diese Forschung entwickelte Fragebögen, werden diese Beurteilung für euch einfach und zeitsparend gestalten.


seht also, am 1. Dezember könnt Ihr Geld verdienen, kompetent euer Wissen über die englische Linguistik einsetzen, euer Grammatikwissen testen und noch etwas dazu lernen. Um die Evaluation der CING zu vollenden, werden wir einige von euch im Januar 2006 zu einer weiteren Sitzung einladen, für die ihr natürlich auch entlohnt werdet.
Appendix C3: Interview answers processed (April 2006)

Weak and Strong Navigators

Answer Allocation Grid for April 2006 Results: Weak

<table>
<thead>
<tr>
<th>Interview-Step 3</th>
<th>110406</th>
<th>110406</th>
<th>110406</th>
<th>110406</th>
<th>110406</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Meaning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Categories/Variables</td>
<td>110406</td>
<td>110406</td>
<td>110406</td>
<td>110406</td>
<td>110406</td>
</tr>
<tr>
<td>1) Have you worked with the CING since the last research session?</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>2) How often? (no category)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3) a) How many hours of English grammar lessons (per week) did you have this term? (approximately)? What was the name of the course? Found. Course, ILC 1, ILC 2 Other; Level of English language knowledge</td>
<td>Foundation Course 2x2Sessions (= 6hours)</td>
<td>ILC 1 3h/week</td>
<td>ILC 1 3h/week</td>
<td>ILC 1 3h/week</td>
<td>Foundation Course 2x2sessions (= 6hours)</td>
</tr>
<tr>
<td>3) b) Was the Simple Past and Present Perfect also included in these lessons? Yes, No</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4) a) From your memory of the research session in December last year, what was most difficult for you in the session? CING, Tests, Questionnaire, Other</td>
<td>Programm war ein bisschen undurchsichtig, die Beispiele waren nicht so klar zu erkennen</td>
<td>Nein, eigentlich nicht schwierig</td>
<td>Nein</td>
<td>Das Durchsehen von diesen Seiten, also ich habe nie so richtig gewusst, wie ich zu den nächsten Seiten komme und zu wissen, wo man jetzt hinklicken muss, damit man da und da hinkommt</td>
<td>Ja die Übungen halt, bin mir aber nicht so ganz sicher</td>
</tr>
<tr>
<td>5) And what was particularly easy for you?</td>
<td>Oberfläche des Programms (Farben)</td>
<td>Weiss ich nicht mehr</td>
<td>Fand das Programm nicht schlecht, zu wenig Zeit aber</td>
<td>Schriftl. Test zu Anfang</td>
<td>Weiss ich nicht mehr</td>
</tr>
<tr>
<td>6) Do you have experience in learning with computer-based</td>
<td>Y (Computersoftware Mathe)</td>
<td>Nein</td>
<td>Nein</td>
<td>Nein</td>
<td>Nein</td>
</tr>
</tbody>
</table>

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learning programs like the CING-that have a hypertextual content structure and require self-guided work?
- Yes ,  - No

7) Please show me with the help of this scale, how good, according to your opinion, your knowledge of the Simple Past/Present Perfect (Usage/Rules) is: Very good 1, good 2, average 3, bad 4, very bad 5

<table>
<thead>
<tr>
<th>Question</th>
<th>110406</th>
<th>110406</th>
<th>110406</th>
<th>110406</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) You already have some experience with the CING: Was working with the program today easier for you than in Dec 2005? Yes ,  Partly ,  No ,  Don’t know</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) If Yes or Partly Why?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience with HT/CING-Structure</td>
<td>a) Nein, im letzten Jahr genauso wenig Probleme damit gehabt b) -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Nein, ich habe mich damit nicht weiter beschäftigt und vieles auch vergessen. […]</td>
<td>a) Nein, der Aufbau des Programms klarer, am Anfang fand ich das alles ziemlich verwirrend und jetzt weiß man schon ein bisschen wie es funktioniert, wie ich die Seiten finde</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Y</td>
<td>a) Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) vielleicht weil ich schon mal damit gearbeitet hatte und zumindest im groben den Aufbau kannte, da konnte ich die dann schneller nutzen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2) You had to use the CING today as well as in December, without an teacher/instructor. Did this cause any problems for you? Yes ,  Partly,  No ,  Don’t know |

| a) Nein, Aufgabenstellungen und CING Erklärungen waren gut erklärt |
| P. Eigentlich nur, bei konkreten Problemen, denn wenn ich was falsch mache, müßte dann selbst erst mal dort nachschlagen … das ist zeitaufwendig, auf der anderen Seite ist es vielleicht |
| Nein, eigentlich in Ordnung so |
| a) N, weil ich da nach dem ausprobieren Prinzip gehe- irgendwann funktioniert das dann halt schon und man muss nicht immer fragen, bin der Meinung, dass |
| a) Nein |
|---|---|---|
| 3) a) What was your task for your CING work? What were you asked to do in the CING? (Task Realisation) b) Which learning activities usually (without CING) help you to solve such a task? (Individual Learning Strategies: Habits) | a) mich in die ganze Grammatik reinzusetzen und auch ich würde denken zu verstehen, wie das alles aufgebaut ist (erst nach einer Nachfrage: ) Habe viel Past und Perfect gemacht b) Alte Lehrbücher/Hefter, immer wieder durchlesen und aufschreiben, weil ich es dann besser behalte | a) nochmal greifen was meine Schwierigkeiten sind, und ob ich die mit der Internet Grammar irgendwie halt verbessern kann und mich halt speziell noch mal auf die beiden Themen SP und PP vorbereiten b) theoretischen Sachen von den Zeitformen, wenn ich mir die noch mal durchlese in Büchern, und teilweise halt auch Übungen um dann hinterher zu schauen, auf jeden Fall mit Lösungen |
| 4) a) Can you explain to me in detail, what you first did in the CING to fulfil the task I gave you? (Specification of Information Goal: First Step/Goal Setting) b) Were there any problems? O Yes, O Partly, O No CING Problems General | Tense/Aspect zuerst (Intro nur im Dez genau) dann Continuous Forms und dann Perfect Forms er ging nicht zu Perfect Forms, sondern zu Past Tense Seiten (Talking about the Past) | a) habe zuerst die Zeiten (Tense) angeklickt, und dann halt mir das Present Perfect ausgesucht und die Beschreibung wann man das anwenden muss (von Perfect Forms und dann kam ja schon der Link Present und der war ja klar dann ) b) Nein, Dez ja |
| 5) a) Please show me the page that you first visited | a) Informationseite war mir klar (Dez) b) c) Simple Past Explanation a) Use of Perfect Explanation b) c) „Perfect“ im | a) bei den Zeitformen geschaut und halt nach Present Perfect gesucht, wo das halt ist und dann mir das durchgelesen was dazu da stand b) Partly bei Simple Past war das nicht so klar, weil das unter Continuous Forms steht und da wusste ich zuerst nicht so richtig… das war eher eine kleine Hürde, dann wenn man richtig guckt, dann findet man das schon |
### Orientation (Knowledge of HT-Structure)
- **b) In case Intro/Menüsite shown in 5a:** And which content page did you first visit?
  - c) How do you know that this site is relevant for your task work?
  - O Title, O Content, O HT-Structure, O Other

### Assessment of Information

<table>
<thead>
<tr>
<th>6) a) And which topic pages helped you best with your task solution? Why? Information Assessment: Relevance for task solution, Learning Strategy Selection</th>
<th>b) And what kind of material was most helpful to you? (If student doesn’t understand “Kind of material”: With the Select Button you can choose different kinds of material). Why? Information Assessment: Relevance for learning strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Continuous und über’s Past noch eine b) Eigentlich die Übungen, [ ] aber obwohl man auch die Erklärungsseiten dazu benötigt, um das dann zu verstehen, wenn man die Aufgaben macht, merkt man auch irgendwann die Fehler, die man macht</td>
<td>a) eher die Present Perfect Seiten, nochmal wann man „for“ nimmt, wann man „since“ nimmt war recht hilfreich, und dann noch die Seite mit den Problemen mit PP habe b) also um einen groben Überblick zu bekommen auf jeden Fall die Erklärung Seiten</td>
</tr>
<tr>
<td>a) am Besten veranschaulicht den Gebrauch von Present Perfect, hat mir die erste Seite (Use of Perfect), weil sie das Funktionsprinzip am Einfachsten beschreibt, oder den Gebrauch und das auch glaub ich vom Past abgegrenzt in knapper Weise b) im Prinzip ist es eine Kombination von Regeln und Beispielen</td>
<td>a) am Besten veranschaulicht den Gebrauch von Present Perfect, hat mir die erste Seite (Use of Perfect), weil sie das Funktionsprinzip am Einfachsten beschreibt, oder den Gebrauch und das auch glaub ich vom Past abgegrenzt in knapper Weise b) im Prinzip ist es eine Kombination von Regeln und Beispielen</td>
</tr>
<tr>
<td>a) Schwer zu sagen, ich fand es stand überall mal was interessantes b) Explanation auf jeden Fall, wenn ich mich auf einen Test vorbereite, lene ich eigentlich lieber die theoretischen Aspekte auswendig</td>
<td>a) Schwer zu sagen, ich fand es stand überall mal was interessantes b) Explanation auf jeden Fall, wenn ich mich auf einen Test vorbereite, lene ich eigentlich lieber die theoretischen Aspekte auswendig</td>
</tr>
</tbody>
</table>

### 7) What did you do on your selected pages for your test preparation? Learning Strategy

<table>
<thead>
<tr>
<th>7) What did you do on your selected pages for your test preparation? Learning Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>komplett alles durchgelesen, bis zum Ende, dann die Aufgaben machen und mit der Korrektur verbessern</td>
</tr>
<tr>
<td>Diesmal habe eigentlich nur gelesen, versucht so viel wie mgl. aufzusagen, weil so wenig Zeit (keine Übungen)</td>
</tr>
<tr>
<td>Durchlesen und wenn mehr Zeit ist, die wichtigsten Punkte rausschreiben und dann das</td>
</tr>
<tr>
<td>8) a) Can you show me pages in the CING that are not relevant for your task work, or that you came across in the CING and realised they were irrelevant for the task?</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>a) meine Seiten [besuchte] waren alle wichtig. Continuous sagt auch aus dass etwas andauert, wie das Perfect. Andere irrelevante Seiten, nur die mit „Future“ im Titel</td>
</tr>
<tr>
<td>b) Why did they look relevant to you? Problems with Information Assessment: CING page titles/content</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9) Show me on this scale, how difficult it was for you to identify relevant pages in the CING: Very difficult, O, O difficult, O average, O easy, O very easy</th>
<th>Ne 5 (trotz des kleinen Problems die PP Seiten zu finden, ich denke ich hätte die schon gefunden)</th>
<th>4 (ich kann hahnt nicht ausschiessen kann, dass mir da was entgeht also relevante oder irrelevante Seiten wegen der Vieseitigkeit auch und dem großen Angebot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 bis 4 (Dez 2)</td>
<td>4 (ich kann hahnt nicht ausschiessen kann, dass mir da was entgeht also relevante oder irrelevante Seiten wegen der Vieseitigkeit auch und dem großen Angebot)</td>
<td>4 (4 bis 5 vielleicht)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10) a) Did the CING cause you problems during your task work/test preparation?</th>
<th>a) Nein eigentlich nicht! b) -</th>
<th>a) Nein, aber es wäre besser vielleicht es in einen Unterricht einzubauen</th>
</tr>
</thead>
<tbody>
<tr>
<td>O Yes, O Partly, O No</td>
<td>a) Nein, aber es wäre besser vielleicht es in einen Unterricht einzubauen</td>
<td>a) + b) Vielleicht ein bisschen bei Orientierung, aber beim 2. Mal ging das alles ein bisschen besser c) nicht wirklich, es war bis zum Ende verwirren, aber ok</td>
</tr>
<tr>
<td>b) What kind of problems? O Naviga-</td>
<td>Material Comprehension, O Titles Comprehension, O Lack of support Self-Learning Strategies, O Other: c) Were you able to solve these problems? O Yes, O Partly, O No: If Yes or Partly, how?</td>
<td>a) ein bisschen Verständnis b) lag an den Wörtern (c) ja, ja so aus dem Zusammenhang, ein Wörterbuch hätte aber vielleicht geholfen</td>
</tr>
</tbody>
</table>

Assessment of
| 11) a) Can you explain to me how you best navigate from the start-page, to the topic pages? (HT-Node Struktur, Expert Usage of Links) b) And how do you best navigate from topic page to topic page? (HT-Node Struktur, Expert Usage of Links) c) If not yet answered in Question 9: Were there problems with navigating within the CING? Yes, ☑ Partly, ☑ No; If Yes or Partly: Which? | a) über das Menu und dann auf Tense/Aspect und dann die Titel wählen die relevant für die Aufgabe sind oder Search Funktion ausprobieren und da ein Stichwort eingeben (wenn man einen Titel nicht findet) b) über das Menu und dann Tense/Aspect c) - | a) bei Content Menu schauen in welche Richtung das geht, worüber man sich informieren soll, dann das einfach mal anklicken und dann hier die am ehesten zutreffenden Titel im Unterpunkt wählen, ich würde sie nur dann anklicken, wenn hier irgendwas im Titel drinsteht was relevant ist, b) „also ich würde zuerst zurückgehen [Back Button to SelectNavi] und dann die nächste [Cing Hierarchie] auswählen, wieder die Explanation, und wenn alles abgearbeitet ist, wieder einen Schritt zurück“ beim PP gab es ja 10 Unterpunkte, da kann man ja vielleicht mal einen überspringen, der jetzt auf den ersten Blick nicht ganz so wichtig ist, aber sonst würde ich schon von oben nach unten durchgehen“ | Über diese Leist mit der Überschrift Content/Menu und da ist schon Tense/Aspect und das sagt mir, dass ich da wahrscheinlich da finde, wonach ich suche Und dann schauen in den Titeln, was auffällig ist oder der Aufgabenstellung am nächsten kommt b) die Titel wie Present Perfect 1, die bauen aufeinander auf, so denk ich mir, dass das schon eine vorgegebene Struktur ist und nicht nur eine Sammlung von Informationen die ungegliedert sind und deswegen orientiere ich mich hält daran c) Nein a) ich würde sagen sich an die Überschriften zu halten und nach dem Ausprobieren Prinzip vorzugehen b) am einfachsten für sie, über hier oben, unten am Ende der Seite steht ja immer so ein Hinweis, die würde ich erstmal beachten und dann sieht man ja hier oben (zeigt auf die Navilinks der Seiten) ja auch noch, wo man hinkann, Backbutton geht aber auch c) - | a) Content/Menu und Tense, weil die Zeitform brauche ich ja, da bin ich dann drauf gegangen und hab dann geschaut, was da in den Titeln stand und hab mich dann weiter vorgearbeitet b) (BackButton), weil dann bin ich ja immer noch so in dem Themengebiet drin und kann vielleicht untere Kapitel aus der schon existierenden CING Struktur auswählen, gibt mir einen guten Überblick c) - |
| 12) Which additional information in the CING would you have wished to have, for your first work with the CING in Dec 2005 to be easier? (Assessment of CING-usage problems) | Erfahrungsmöglichkeiten mit dem Programm, bevor man es nutzt, Nein, ausser 13 a) | Besser, wenn dieses Programm als Referenzmittel für Grammatikübersichten vorgeschlagen wird und man vielleicht auch das Programm im Unterricht zum Teil nutzt Mehr Hinweise, wie man jetzt genau wo hin gelang, also über die Titelinhalte wenn die Vokabeln einfacher gewesen wäre, hätte ich vielleicht schneller mich durcharbeiten können und weniger Zeit verloren (aber das lag auch an der Sitzungszeit), aber Wörterbuch wäre gut |  |
| 13) a) Is there anything that you noticed about the CING within this nähere Beschreibung der Titel wäre vielleicht hilfreich a) Zeitstrahl war überladen (auf SPseite) im Dezember habe ich hier mal so eine Übung gemacht - |  |  | b) einfacher Sätze |
session that you have not mentioned yet? (no matter how unimportant it seems to you)

CING problems: general

b) What do you wish for the CING, in order that working with the CING becomes easier?

CING problems: general

| um Inhalte hinter den titeln besser zu verstehen | Er braucht kurze Hilfestellung um aus SP Bereich zu PP zu kommen | und dann kam ja immer nur grün oder rot, und da hätte ich mir dann die Berichtigung gewünscht und nicht nur das da steht falsch, |
---|---|---|

After adding all quotations, allocate those questions with a similar content focus and combine the information for each learner given on different questions.
Appendix C4: Interview processing (April 2006)

**Weak Learners**


Answer categories for monitor validation. Analysis reminders in italics.

<table>
<thead>
<tr>
<th>Question/Investigation Aspect</th>
<th>01.12.05-71 11.04.06-1</th>
<th>01.12.05-46 12.04.06</th>
<th>01.12.05-16 19.04.06</th>
<th>01.12.05-27 20.04.06</th>
<th>01.12.05-64 21.04.06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec05: Navigduration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec05: Navistepperformance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrelevant Page Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrelevant Page Time Performance</td>
<td></td>
<td></td>
<td>THESE ANSWERS ARE REPRESENTED BY STATISTICS OR GIVEN FACTS (NUMBER AND KINDS OF PAGES VISITED) AND RECEIVE NO ANSWER CATEGORISATION for the monitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevant PageNr-Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RelevantpageTimeperformance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason for selecting student</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pages visited Dec05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CING-Interview April 2006**

**Schritt 3**

1. CING-Experience Y/N

<table>
<thead>
<tr>
<th>Answer categories</th>
<th>1: Yes</th>
<th>2: No</th>
</tr>
</thead>
</table>

2. CING-Experience Frequ.

| Deleted from further investigation: No one answered Y to 1. |

3. Type of Grammar Lessons (Dec05-Feb06)
   **Add: Bursary Grades**

<table>
<thead>
<tr>
<th>Answer categories</th>
<th>1: Foundation Course</th>
<th>2: ILC1</th>
<th>3: ILC2</th>
</tr>
</thead>
</table>

4. SP/PP grammar learning (Dec05-Feb06)

<table>
<thead>
<tr>
<th>Answer categories</th>
<th>1: Yes</th>
<th>2: No</th>
</tr>
</thead>
</table>

5. CINGexp. Dec05-most difficult

| Answer categories | 1: Does\n\n\nLanguage |
|-------------------|-------|-------|
Material problems; Navigation within the CING; Not enough time in the research session;

**6. CINGexp. Dec05-easiest**

**Answer categories:**
- CING is easy to use
- CING has a good design
- CING has a clear structure;
- CING is not too difficult
- CING has a good variety of material
- The CING Dual Approach is good

**7. CALL/CING-like experience**

**Answer categories:**
- 1: Y
- 2: N
- CD-Rom instructional software (school)

**8. Self-assessment SP/PP knowledge**

**Answer Categories**
- Likert Scale

**9. Self-assessment SP/PP gaps**

**Answer Categories**
- 1: Usage Practice SP and PP
- 2: Usage Practice PP
- 3: Learn keywords for SP and PP again
- 4: Revision of exceptions

**Schritt 4: Interview**

<table>
<thead>
<tr>
<th>Question/Investigation Aspect</th>
<th>11.04.06</th>
<th>12.04.06</th>
<th>19.04.06</th>
<th>20.04.06</th>
<th>21.04.06</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CING work today better than Dec05? b) Why (did the CING experience (Dec05) help)??</td>
<td>Answer categories</td>
<td>1: Y 2: N</td>
<td>Explanation: 1) Knew how to work with the CING (material pages, exercises) 2) As difficult as in Dec05- (Dec05 - April06: too long to remember CING usage) 3) Further English grammar practice (via courses) helped</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2. Problems with CING use without teacher? (Comfort with Self-guided learning)

**Answer Categories:**
1: Y
2: N

**Explanation:**
1) Task and CING explanations clear
2) Self-Solution of problems is time consuming and/or difficult, as I have to find the solution myself
3) Working out problem by yourself is helpful to your learning
4) After a short trial through the CING its easy
5) Learning with the CING is the same as when I learn by myself
6) I found everything
7) Can’t say as I never used it with a teacher

## 3a. What was your task in CING? (Specification of information goal)

**Answer Categories**
1) Focussed specification of information goal (with self-assessment)
2) Appropriate specification of information goal (no self-assessment)
3) Weak specification of information goal (no self-assessment)

## 3b. Students’ learning strategies (without CING) for grammar test preparation; (Learning strategies without CING for task realisation)

**Answer categories:**
1) Rule revision/memorisation with signalwords
2) Rule revision where learner has problems
3) Exercise practice
4) Exercise practice of aspects, where learner has problems
5) Use CourseBook/Lesson Notes/Grammar Books as revision material
6) After exercise practice, check mistakes and revise rules
7) Use information memorised from lesson, no preparation
8) Take notes of rule information
9) Build own example sentences of the learned structure

## 3c Problems with strategies (3b) in CING?

**Answer Categories:**
1: Y
2: N

April06: N
Dec05: Needed time
### Explanation:
1) Material difficulty
2) Theories on CING pages looked similar

#### to get used to structure: where to find what.

Once you have understood the Principles and have some practice its much easier.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer Categories</th>
</tr>
</thead>
</table>
| **4a:** What was the first you did in the CING to solve the task? (Specification of Information Goal: Strategy for Goal Achievement) | **Answer Categories:**
  1) Via Menu: Tense/Aspect directly to Simple Past
  2) Via Menu: Tense/Aspect directly to Present Perfect
  3) Via Menu: Tense/Aspect directly to irrelevant pages
  4) Follow the CING hierarchy of pages
  5) Follow the titles with the word “Perfect” / “Present”
  6) Get an overview                                                     |

<table>
<thead>
<tr>
<th><strong>4b. Problems with 4a?</strong></th>
<th><strong>Answer Categories</strong></th>
</tr>
</thead>
</table>
| **1:** Y **2:** N                         | **Explanation**
|                                           | 1) Fail to find SP pages, only after trialing/searching deeper
|                                           | 2) Keywords of SP and PP in the titles helped to find material |

| **5a. Show me first page you visited and consciously read (Understanding of HT-Structure*), Adequate specification of information goal) | **Answer Categories:**
|---|---|
|                                           | Use of Perfect-Expl/Disc (rel)
|                                           | Simple Past Expl (rel)
|                                           | Simple vs Contin (irrel) Intropage or Relevant Irrelevant Intropage |

<table>
<thead>
<tr>
<th><strong>5b. which topic page? (5a)</strong></th>
<th><strong>Answer Categories</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Use of Perfect Disc</td>
</tr>
<tr>
<td></td>
<td>Use of Perfect Expl</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>**5c. How do you know this site is relevant to your task? (Assessment of relevance of (found) information)</th>
<th><strong>Answer Categories</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1)</strong> Title: Keyword <strong>2)</strong> Content: Keyword <strong>3)</strong> Content Structure/Design <strong>4)</strong> Place of the page in the hierarchy (first place= introductory page) <strong>5)</strong> Material topic and type helpful to my learning strategy</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>6a. Which topic pages helped you most in your task preparation?</strong></th>
<th><strong>Answer Categories</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1)</strong> Information Assessment <strong>a)</strong> very relevant (IA)</td>
<td></td>
</tr>
<tr>
<td>Information Assessment: Relevance for task fulfilment, Specification of existing knowledge gap (Learning Strategy)</td>
<td>strongly guided by own knowledge gaps) b) relevant (general with guidance by learning strategy/knowledge gaps) c) general (without particular focus on own knowledge gaps, learning strategy or task requirement) d) irrelevant e) learning strategies were disabled due to Research situation</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6b. What kind of material was most helpful to you (SelectButton Choice). Why? Information Assessment: Material type Relevance for learning strategies</td>
<td>Answer Categories 1) CING Material type assessment relevance for Learning Strategy a) strongly connected b) connected c) weakly connected</td>
</tr>
<tr>
<td>7. What did you do on your selected pages for your task preparation? Learning Strategy</td>
<td>Answer Categories: Learning Strategy 1) Rule memorisation 2) Exercise to practice rules 3) Examples compare to rules 4) Correct exercises with feedback option 5) Learning activity according to needs (also material (type) selection) 6) CING research session kept them from following all learning strategies (too little time) This question shows if learners have a clear learning goal towards* *their strategies (and those considered helpful to learning)- but says nothing about their specification of their information goal</td>
</tr>
<tr>
<td>8a. Can you show me pages in the CING that were not relevant to your task, but seemed to be at first? (Assessment of Information Relevance to task)</td>
<td>Answer Categories: 1) Assessed irrelevant info as relevant = bad assessment 2) Assessed irrelevant info irrelevant</td>
</tr>
<tr>
<td>8b. Why do they seem relevant to</td>
<td>Answer Categories: a) Confuses Important: The fact *randomly distributed</td>
</tr>
</tbody>
</table>
9. Show me on this scala, how difficult it was for you to find relevant pages (Title clarity/ Title assessment)

<table>
<thead>
<tr>
<th>Answer categories:</th>
<th>Likert scale 1-2-3-4-5</th>
</tr>
</thead>
</table>

10a. Did the CING cause you problems during your task realisation/preparation?

<table>
<thead>
<tr>
<th>Answer Categories:</th>
<th>1) Y 2) N</th>
</tr>
</thead>
</table>


<table>
<thead>
<tr>
<th>Answer Categories:</th>
<th>Feedback system was confusing 2) Orientation problems 3) Problems improved after using the CING for a while 4) Material comprehension (vocabulary) 5) Reading off the screen difficult 6) Navigation/navigation tools confusing 7) Learning with CING maybe better in instructional setting</th>
</tr>
</thead>
</table>

10c. Were you able to solve these problems yourself?

<table>
<thead>
<tr>
<th>Answer Categories:</th>
<th>1) Y 2) N</th>
</tr>
</thead>
</table>

**Explanation:**

a) Failed to read instructions properly
b) Problem Solution works, after some trial period
c) Use/read material more carefully
d) Translation of vocab with the help of the sentence context

11a. How do you best navigate from

<table>
<thead>
<tr>
<th>Answer Categories:</th>
<th>Important: <em>self-guided learning</em></th>
</tr>
</thead>
</table>

*a) read Intro Page*
the start page to a content page? (Usage of HT-content/title structure from start)

| 11b. How do you best navigate from content page to content page (Comprehension of HT-content/title structure within topic areas, Expert Usage of links) | Answer categories: a) Follow the hints at bottom of CING content pages b) Use the Navilinks-bar c) BackButton to SelectNavi for an overview of the other topic pages d) BackButton to SelectNavi and choose next (relevant) page in the hierarchy e) Choose pages that help you solve your problems with certain grammar structures first, then pages on content you already know f) < and >> tell me the Navilinksbar brings me to other topics further down the hierarchy g) Via Menu and Tense/Aspect With navilinks, they show the structure of the pages, so I follow this structure h) with the help of the Corresponding Pages link i) If you know exactly what you are looking for, you don’t need to follow the structure | Important: A navigation strategy that sticks to BackButton and SelectNavi, as well as Menu Tense/Aspect choosing page following in the hierarchy is in this context more a navigation on the surface of the CING HT structure Navigation with Navilinks and Corresponding Pages where students choose most relevant titles and not only the next in the hierarchy is a more advanced move into the depth of the CING HT structure |

| 11c. Did you experience problems when navigating through | Answer categories: 1) Y 2) N December | - |

| - | - | - | - | - | - |

Whereas the strategy of following the CING’s page hierarchy is less self-guided.
the CING? Which?

<table>
<thead>
<tr>
<th>problems:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Tried to click SelectButton on Intropage, as it was so obvious, but didn’t read the Intropage properly</td>
</tr>
<tr>
<td>b) The titles were difficult for me to understand as I knew little what the terms meant</td>
</tr>
<tr>
<td>c) Backbutton and SelectButton need to be presented clearer (and on the intropage less obvious so it doesn’t invite to click it)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unaddressed Problems:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Hints on meaning of titles</td>
</tr>
<tr>
<td>b) Design the graphs clearer and less overloaded</td>
</tr>
<tr>
<td>c) give time to experience the CING freely before using it in instruction/test situation</td>
</tr>
<tr>
<td>d) Make examples language and rule language easier</td>
</tr>
<tr>
<td>e) add a dictionary</td>
</tr>
<tr>
<td>f) Incorporate the CING in a lesson situation</td>
</tr>
<tr>
<td>g) Give better and clearer feedback on exercises</td>
</tr>
<tr>
<td>h) Design the feedback system clearer (numbers for feedback answers AND exercise sentences)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. Which other information would you have liked to have when first working with the CING, so that learning and working became easier? (Unaddressed CING problems)</th>
</tr>
</thead>
<tbody>
<tr>
<td>s.a.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13a. Was there anything you noticed in this session, but that we have not talked about yet?</th>
</tr>
</thead>
<tbody>
<tr>
<td>s.a.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13b. What do you wish the CING to have in the future, so that working and learning becomes easier with it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>s.a.</td>
</tr>
<tr>
<td>Problem:</td>
</tr>
</tbody>
</table>
## Appendix C5: Grid for interview results analysis

**Answers allocated to the different learning theories**

**Italicics: Comments were summarized by me for shortening and ease of understanding**

<table>
<thead>
<tr>
<th>Theory</th>
<th>S3= Schritt 3</th>
<th>S4= Schritt 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QT exper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N, N</td>
<td>N,N</td>
</tr>
<tr>
<td></td>
<td>S4/1 Y</td>
<td>S4/1 Y</td>
</tr>
<tr>
<td></td>
<td>N, N</td>
<td>N, N</td>
</tr>
<tr>
<td></td>
<td>S4/1 Y</td>
<td>S4/1 P</td>
</tr>
<tr>
<td></td>
<td>N, N</td>
<td>S4/1, N</td>
</tr>
<tr>
<td>Q3/1</td>
<td>N, N</td>
<td>N</td>
</tr>
<tr>
<td>Q3/2</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Q3/3</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Q3/4</td>
<td>N, N</td>
<td>N</td>
</tr>
<tr>
<td>Q3/5</td>
<td>N, N</td>
<td>N</td>
</tr>
<tr>
<td>Q3/6</td>
<td>N, N</td>
<td>Y (CD-Rom, Mathe/Ethik)</td>
</tr>
<tr>
<td>Q4/1</td>
<td>Y, durch die Übung (im Semester) mit der Grammatik</td>
<td>Y war übersichtlicher jetzt</td>
</tr>
<tr>
<td></td>
<td>Y, weiß wie es funktioniert (auch feedback) und weil English besser geworden ist</td>
<td>Partly, weil CING Struktur bekannt war, aber Select B. on 1st page still 2 obvious</td>
</tr>
<tr>
<td></td>
<td>N, genauso schwer</td>
<td>N, genauso wenige Probleme damit gehabt</td>
</tr>
<tr>
<td></td>
<td>Y, weiß ich nun schneller finde, was ich suche (weil ich die CING schon kenne)</td>
<td>N, hatte vieles vergessen daher gleich (wie im Dec) aber wusste schon wohin und was ich anschauen sollte</td>
</tr>
<tr>
<td></td>
<td>Y, weiß jetzt wie ich die Seiten finde und wie der Aufbau der CING ist</td>
<td>Y, konnte vielleicht schneller nutzen, da ich den Aufbau schon kannte</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QT experi.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Y, durch die Übung (im Semester) mit der Grammatik</td>
<td>Y war übersichtlicher jetzt</td>
</tr>
<tr>
<td></td>
<td>N, N</td>
<td>N, N</td>
</tr>
<tr>
<td></td>
<td>S4/1 Y</td>
<td>S4/1 P</td>
</tr>
<tr>
<td></td>
<td>N, N</td>
<td>S4/1, N</td>
</tr>
<tr>
<td>Q4/2</td>
<td>Ein wenig, Feedbackantworten unklar, Notwendigkeit zum nachkontrollieren warum Fehler gemacht</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>N, mit durch klicken findet man alles</td>
<td>N, wenn man sonst was macht mit Lernen, dann macht man das ja auch selbst</td>
</tr>
<tr>
<td></td>
<td>N, (CING erklärungen gut erklärt)</td>
<td>P, bei konkreten Problemen (Grammatik) weis ich selber Lösung finden muss, kann aber auch gut marn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QT experi.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meine Mitschriften und mit speziellen Grammatik-büchern, vor allem über Probleme habe, mache Beispiele</td>
<td>meiner Übersicht über engl. Grammatik Alles kurz and knapp, scheue dann mir alles an, wo ich Probleme habe</td>
</tr>
<tr>
<td></td>
<td>Bücher mit Lösungen, Erklärungen durchsehen, dann den Übungen und dann Lösungen was ich so falsch habe</td>
<td>Übersichtliche Bücher im klar. Index (Simple Past+Seite) erst Regeln dann Beisp. dazu, Nicht gelernt, aus Unterricht mitbekommen</td>
</tr>
<tr>
<td></td>
<td>Alte Lehrbücher und Hefter, aufschreiben (Regeln etc.) zum behalten</td>
<td>Alle Lehrbücher und Hefter, aufschreiben (Regeln etc.) zum behalten</td>
</tr>
<tr>
<td></td>
<td>Grammatikbuch, über Regeln/Signale wie es funktioniert, Übungen mit Lösungen machen</td>
<td>Mit entspr. Bücher Verwendung (Regeln) und besonders Übungen mit Lösungen, nur wenn man es</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QT experi.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Appendices, Experiment</td>
<td>Appendix C5: Grid for interview results analysis</td>
</tr>
</tbody>
</table>

**English Knowledge and SUC: HT/CING learning**

<table>
<thead>
<tr>
<th>Q3/3a</th>
<th>FC ILC2 FC ILC1 ILC1 FC ILc1 ILC1 FC ILC1 ILC1 FC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3/3b</td>
<td>Y Y Y Y Y Y Y Y Y Y Y Y</td>
</tr>
</tbody>
</table>

**Compet. Use of SL strategies**

<table>
<thead>
<tr>
<th>Q4/3</th>
<th>PC ILC2 FC ILC1 ILC1 FC ILC1 ILC1 FC ILC1 ILC1 FC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y Y Y Y Y Y Y Y Y Y Y Y</td>
</tr>
</tbody>
</table>

**Appendix C5: Grid for interview results analysis**

**Theory**

**S3= Schritt 3**

**S4= Schritt 4**

**Appendices, Experiment**

**Compet. Use of SL strategies**

- 286 -
Q46b
Discovery, weil Beispiele mit Versteck-Check u. Lösungen zum Selbst-Check

Q46c

Q47
a) learning

b) page material selection

Q48b
definition

information on learning goals
Q43a, Q44a
Spec info
goal: learnergoal achieve, Strat.

Q48c
Specify relev. information on and use it
Q37a, Q38, Q40

- 287 -
| Q4/5b | Spec info goal: HT-understood | Introseite, Use of Perfect (Dann Discovery) | Use of Perfect (SP nicht – keine Probleme) | Use of Perfect (Explan gegen Regeln zuerst) SP nicht, da keine Probleme und nicht so viel Zeit | Use of Perfect Explan | Introseite (schnell klar) dann Simple vs Continuous, | SP Explanation | UoP Expl | UoP Expl | UoP Expl |
| Q4/5c | Assess of info relevant | Titel passten am besten zur Aufgabe | Schlüsselwort in Titel und Inhalt | “Use” benutzen und “Perfect” und Discovery (dass ich selber darauf zu kommen) | Inhalt und Titel | stand ganz oben in der Liste andere Titel eher weiterführen | Wegen dem Titel und dem Seitenaufbau | SP im Titel | Inhaltdul und Titel | „Perfect” im Titel Schlüsselwort im Titel und „The general case“ | PP im Titel war schon klar |
| Q4/6a | UoP Disc Beispiele mit Fragen/ Check zum System dahinter, ob man verstanden hat | Alle und UoP besonders, For-Since nur gut zum durchlesen | Übungen zu allen Themen | PP. 1+2+3. Do not use the Perf: (weil so kurz und knapp) | Eigelt keine (Problem: Bildschirmen) | Continuous und was über Past | PP Seiten (habe mehr Probleme mit PP): zu “For” und “Since” Nutzung, Doppeltdeutigkeit von since | UoP, beste Erklärung des PP Ge- brauchs und knapp vom SP abgenutzt | UoP und Perfect: YoN Nutzung genau beschreiben gute Graph zum bildlichen Vorstellen | Überall was interessantes |
| Q4/9 | 4-5 | 4 | 4 | 4 | 4-5 | 3-4 | 5 (trotz Problem) | 4 (kann nicht ausschließen, dass mir was entgeht) | 4 | 4-5 | - 288 - |
Assess info relevance : learn strategy

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S/4</td>
<td>alles schwierig (lange kein Englisch)</td>
<td>Feedback Antworten zu meinen Übungen nicht verstanden</td>
<td>Im Dez. Select-button auf Innenseite wollte klicken</td>
<td>Feedback besser darstellen so dass ich weiß, wenn was inkorrekt ist</td>
<td>Unubersichtlich, nicht klar, wie man (Titel oder Tense) (im Titel) hinkommt, Übungs-sätze (Schachtel-sätze) teilweise kompliziert Vokabeln nicht kompliziert</td>
<td>Im Dez. nicht gleich gefunden was gesucht Klick im Redaktionstext nicht Verständnis Vorlage nicht klar</td>
<td>Back-button eindeutiger ge- zeichnet, Zeitein- schränkung machte es schwierig konnte man Zeit nehmen zum Suchen (die man braucht beim ersten Mal)</td>
<td>Klare Auflösung der Themen in Tense fehlt Select-button am Anfang unklar</td>
<td></td>
</tr>
<tr>
<td>PP Anwen- dung</td>
<td>(denkt Past Condit. ist relevant wegen Past im Titel) Feedbacksystem besser darstellen (Zahlen auf beiden Seiten, Satz und Korrektur)</td>
<td>Probleme mit dem PP Diagramme unubersichtlich und überladen Klar Index der Missverständnisse mit Con und SPast vermeiden hilft</td>
<td>Programmsicht.</td>
<td>Beispiel nicht klar erkennbar</td>
<td>Erfahrungsglück. mit dem Program bevor man es nutzt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Zeitrahl</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- war eine Hürde (zu finden wenn man schaut)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Versteht Back und Foreground nicht</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Verständnispro- bleme des Materials, Vokabeln Wörterbuch hätte geholfen</td>
</tr>
</tbody>
</table>

Additional questions from quantitative research study:

- 289 -
<table>
<thead>
<tr>
<th>Does experience with the CING help working with it?</th>
<th>See answers on question 4/1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learners' non-usage of the Simple Past pages</strong></td>
<td></td>
</tr>
<tr>
<td>(3/8) Simple Past am einfachsten</td>
<td>x</td>
</tr>
<tr>
<td><strong>Learners' problems with material salience</strong></td>
<td></td>
</tr>
<tr>
<td>Alles schwierig (Lange kein English)</td>
<td>x</td>
</tr>
</tbody>
</table>

These questions do not contain the question on learners’ problems in general and with autonomous learning (Competent Use of Self-learning strategies, 4/2), as the questions are already included in the above interview question set.
Appendix C6: Categorisation of interview results for intercoder reliability

Coding categories

<table>
<thead>
<tr>
<th>Question</th>
<th>Coding Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Hast du seit der letzten Forschungssitzung noch mal mit der CING</td>
<td>Ja</td>
</tr>
<tr>
<td>gearbeitet?</td>
<td>Nein</td>
</tr>
<tr>
<td>2) Wie oft ungefähr?</td>
<td>Zahl</td>
</tr>
<tr>
<td>3a) Wie viele Stunden Grammatikunterricht (in der Woche) hastest du</td>
<td>FoundCourse:</td>
</tr>
<tr>
<td>dieses Semester? (ungefähr)</td>
<td>ILC 1:</td>
</tr>
<tr>
<td>3b) War das SimplePast und/oder Present Perfect auch Inhalt des</td>
<td>Ja</td>
</tr>
<tr>
<td>Unterrichts?</td>
<td>Nein</td>
</tr>
<tr>
<td>4) Aus deiner Erinnerung an die Forschungssitzungen im Dezember</td>
<td>- Alles</td>
</tr>
<tr>
<td>letzten Jahres, was war für dich das schwierigste in der Sitzung?</td>
<td>- Feedbackantworten</td>
</tr>
<tr>
<td>*Nicht kategorisiert, weil es in CING-Problem (was ist gut an dem Tool)</td>
<td>- Unübersichtlich/undurchsichtig</td>
</tr>
<tr>
<td>eingebaut ist.</td>
<td>- PP (Anwendung)</td>
</tr>
<tr>
<td>- Backbutton nicht gefunden</td>
<td>- Erinnerung nicht eindeutig</td>
</tr>
<tr>
<td>5) Und was war besonders leicht für dich? *Nicht kategorisiert, weil es</td>
<td>Ja</td>
</tr>
<tr>
<td>in CING-Problem (was ist gut an dem Tool) eingebaut ist.</td>
<td>Nein</td>
</tr>
<tr>
<td>6) Hast du generell Erfahrung im Lernen mit computerbasierten</td>
<td>Ja</td>
</tr>
<tr>
<td>Lernprogrammen wie der CING? (die Hypertext haben und selbstgesteuerte</td>
<td>Nein</td>
</tr>
<tr>
<td>Arbeit verlangen)</td>
<td></td>
</tr>
<tr>
<td>7) Zeige mit Hilfe dieser Skala, wie gut deiner Meinung nach dein</td>
<td>Sehr gut</td>
</tr>
<tr>
<td>Wissen über das SimplePast/ Present Perfekt (Anwendung/ Regeln) ist!</td>
<td>1 – 2 – 3 – 4 - 5</td>
</tr>
<tr>
<td>8) In welchen Bereichen des SP/ PP denkst du, dass du noch etwas mehr</td>
<td>Sehr Schlecht</td>
</tr>
<tr>
<td>Übung brauchst?</td>
<td></td>
</tr>
<tr>
<td>1) Unterscheidung SP und PP im Kontext</td>
<td></td>
</tr>
<tr>
<td>2) Unterscheidung SP und PP im Kontext, SP ist das einfachste</td>
<td></td>
</tr>
<tr>
<td>3) Regelerklärung (wann welche Zeitform),</td>
<td></td>
</tr>
<tr>
<td>4) Regelerklärung (wann welche Zeitform), mit Unterscheidung SP und PP</td>
<td></td>
</tr>
<tr>
<td>im Kontext</td>
<td></td>
</tr>
<tr>
<td>5) Anwendung von SP und PP (korrekt)</td>
<td></td>
</tr>
<tr>
<td>6) Signalworte zu beiden Themen</td>
<td></td>
</tr>
<tr>
<td>7) Ausnahmen der beiden Themen und Anwendung von SP und PP</td>
<td></td>
</tr>
<tr>
<td>8) Other</td>
<td></td>
</tr>
</tbody>
</table>

InterviewerInformation: *Kommen wir zum vierten Schritt, dem eigentlich interessantesten Teil
der Basis der Sitzung: der CING-Bewertung.*

| 1. Du hast schon ein bisschen Erfahrung mit der CING:                      | Ja: A, Teilweise: B, Nein: C, |
| War die heutige Arbeit mit dem Programm einfach für dich, als im Dezember | 1) Durch Englisch-/Grammatikübungen im Semester |
| 2005? (Erfahrung mit HT-Strukturen)                                       | 2) Übersichtlicher |
|                                                                             | 3) Struktur/Aufbau und Feedbacksystem bekannt und besseres Englisch |
|                                                                             | 4) Struktur/ Aufbau bekannt |
|                                                                             | 5) Schneller Material finden |
|                                                                             | 6) Genauso |
|                                                                             | 7) Orientierung besser |
|                                                                             | 8) Other |
1) TW, Feedbacksystem nicht verstanden  
2) TW, Problematisch: Fehlerklärung muss man selber finden, kann aber auch gut sein  
3) N, Lernen auch sonst ohne Lehrer  
4) N, Habe alles gefunden (durch durchklicken)  
5) N, Selber ausprobieren hilft mehr beim Lernen  
6) N, Kein Problem  
7) Other |
|---|---|
| 3.a) Was war deine Aufgabe für die Arbeit in der CING? Was solltest du in der CING tun?  
b) Welche Lernaktivitäten helfen Dir normalerweise (ohne CING) bei der Lösung einer solchen Aufgabe? (Task realisation)  
c) Gab es Probleme dabei? | A)  
1) Meine Problemthemen ansehen (zu SP und PP, also zum Task vorbereiten)  
2) Über SP und PP informieren, Anwenden, Wissen verbessern  
3) Wissen über SP und PP (verbessern/informieren)  
4) Über Anwendung des PP informieren  
5) Über SP und PP informieren und dessen korrekte Anwendung  
6) Grammatikaufbau von SP und PP verstehen  
7) Auf Test zu SP und PP vorbereiten  
8) Other  
B)  
1) Notizen/Mitschriften, Grammatikbücher zum durcharbeiten, vor allem üben!!  
2) Meine Grammatikübersicht, durcharbeiten und dann üben mit Beispielen  
3) Grammatikbücher durcharbeiten, Übungen mit Lösungen für Fehlerfeedback  
4) Grammatikbücher m. klar. Index, Regeln durcharbeiten, Üben mit Beispielen, Notizen machen und Fehler durch Lösungen nacharbeiten  
5) Nur Unterricht, kein Lernen notwendig  
6) Beispiele ansehen, keine Übungen  
7) Other |
| 4a. Kannst du dich erinnern und mir genau erklären, was du in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? (Specification of Information Goal: First Step; Goal Setting)  
A)  
1) Tense/Aspect (Menu), zu(Aufgaben-)relevanten Seiten (SP o. PP) anhand der relevanten Links/Titel (Presen/Past/Perfect/Continuous)  
2) Discovery - PP Seiten durchgehen (wegen Beispielen und Anwendungsmuss)  
3) Intropage lesen dann Tense/Aspect (Menu), zu(Aufgaben-relevanten Seiten (SP o. PP) anhand der relevanten Links/Titel (Presen/Past/Perfect)  
4) Zuerst PP ansehen, weil größtes Problem  
5) Auf SelectNavipage (Zeitformenseite): Regeln/Theorie/Beispiele: lesen, erfassen,  
6) Erst Introseite, dann Perfect Seiten  
7) Tense/Aspect, dann Continuous und danach Perfect Forms  
8) Tenses, dann SP (Regeln und Beispiele)  
9) Tense/Aspect, dann Present Perfect Seiten  
10) Other |
| 5a. Zeige mir jetzt die Seite, die du als erstes in der CING besucht und gelesen hast. (Knowledge gaps, (Orientation: Knowledge of HAT-Structure*)) | A und B zusammen  
1) Introseite  
2) Seite zu PP  
3) Seite zu SP |
| 5b. Falls Intro/Menu/Site in 5a, welche Themenseite hast du zu allererst besucht? | 4) Irrelevante Seite  
Kategorie 2,3: Es wurde nur entw. UoP oder SP Expl. Besucht (absolut relevant aber auch beide an erster Position in der SelectNavi-Liste) |
| 5c. Woran erkennst du, das diese Seite relevant für deine Testvorbereitung ist? (Assessment of Information) | 1) Titelrelevanz für die Aufgabe (Schlüsselworte PP/SP)  
2) Titel (auch Schlüsselworte) und Inhalt  
3) Erste Position in der Linkliste (SelectNavi)  
4) Titel und Seitenaufbau (mit Regeln/Beispielen)  
5) Relevanz für mein Problem (mit SP und PP)  
6) Other |
| 6a. Und welche Themenseiten haben Dir am besten bei der CING Vorbereitung geholfen? Warum? (Information Assessment: Relevance for task fulfilment, Learning Strategy Selection) | 1) PP Seiten  
2) Alle aufgabenrelevanten Seiten  
3) Keine  
4) Aufgabenirrelevante Seiten und zu Past  
5) Es gab überall was interessantes  
6) Other |
2) Discovery  
3) Übungen/ Exercises (zur Anwendung, nur Regeln helfen nicht)  
4) Erklärung/ Übungen (lerne bes. bei Übungen)  
5) Discovery (wegen Beispielen, Verstehenscheck und Lösungen als Fehlerfeedback)  
6) Übungen und Regelseiten  
7) Erklärung  
8) Regeln und Beispiele kombiniert  
9) Other |
| 7. Was hast du dann auf den ausgewählten Seiten getan für deine Testvorbereitung? (Learning Strategy) | 1) Regeln lesen/ Erklärung  
2) Beispiele konzentriert lesen/ Discovery  
3) Regeln lesen und Übungen machen/ Exercises  
4) Regeln komplett durchlesen und bekannte Sachen überspringen  
5) Regeln lesen und Übungen machen und bekannte Sachen überspringen  
6) Regeln lesen und Übungen machen und Korrektur mit Feedback  
7) Beispiele und Übungen machen und Korrektur mit Feedback  
8) Regeln und Beispiele und Übungen mit Korrektur durch Feedback  
9) Other |
| 8. Kannst du mir Seiten in der CING zeigen, die nicht relevant für deine Aufgabe waren, die du aber zuerst für relevant gehalten hast? (Information Assessment) Warum sahen die für dich relevant aus? Wird wörtlich später in die Probleme aufgenommen und die Erklärung für dieses Verhalten/Einstellung | 1) Continuous und Future Seiten sind irrelevant (Future und Continuous im Titel)  
2) Future Seiten sind irrelevant  
3) Past Perfect und Future Seite irrelevant, Contin. nicht klar  
4) Contin Seiten relevant und Background und Foreground unklar (Past und Perfect im Titel)  
5) Background/Foreground nicht klar, Inhalt zeigt dann irrelevanz  
6) Fut irrelev und Past/Perfek Contin=relevant und (past und Perf)Titel zeigt Relevanz  
7) Past/Perf in Titel = Relevanz und Titel zeigt Relevanz (Inhalt aber zeigte Irrelevanz)  
9) Other |
| 9. Zeige mir auf dieser Skala, wie schwierig es für dich war relevante Seiten in der CING zu erkennen. | Sehr schwer 1 - 2 - 3 - 4 - 5 Sehr leicht |
10a. Bereitete Dir die CING Probleme während deiner Aufgabenbearbeitung/ bzw. Testvorbereitung?

b) Welcher Art?

c) Konntest du diese Probleme lösen?

Wie?

(Identification of learning/navigation strategies)

<table>
<thead>
<tr>
<th>A und B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Feedbacksystem nicht verstanden</td>
</tr>
<tr>
<td>2) Material schwierig</td>
</tr>
<tr>
<td>3) Am Bildschirm kann ich nicht lesen</td>
</tr>
<tr>
<td>4) Keine Probleme</td>
</tr>
<tr>
<td>5) Backbutton nicht direkt gefunden</td>
</tr>
<tr>
<td>6) Anderes Thema nicht gefunden (PP)</td>
</tr>
<tr>
<td>7) Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0) Keine Problemlösung notwendig</td>
</tr>
<tr>
<td>1) Ansehen der Erklärung</td>
</tr>
<tr>
<td>2) Nach einer Weile gefunden</td>
</tr>
<tr>
<td>3) Sorgfältiger lesen</td>
</tr>
<tr>
<td>4) Hätte ich lösen können, wenn alle (von vorne angefangen)</td>
</tr>
<tr>
<td>5) Vokabeln aus dem Zusammenhang verstanden</td>
</tr>
<tr>
<td>6) Orientierung beim 2 Mal (CING Nutzung) besser</td>
</tr>
<tr>
<td>7) Other</td>
</tr>
</tbody>
</table>


b. Und wie navigierst du am Besten von Themenseite zu Themenseite? (HT-Node Strukture, Expert Usage of Links)

c) Nur wenn noch nicht in 9. beantwortet: Gab es Probleme beim Navigieren in der CING?

Welche?

(Nicht kategorisiert: wörtlich in CING-Probleme übernehmen)

<table>
<thead>
<tr>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Introseite lesen, Tense/Aspect und relevanteste Seiten lesen/ durchgehen</td>
</tr>
<tr>
<td>2) Search oder Tense/Aspect (Menu) und relevanteste Seiten lesen/ auswählen</td>
</tr>
<tr>
<td>3) Tense/Aspect, dann relevante Seiten und Material (Selectbutton) was ich will aussuchen</td>
</tr>
<tr>
<td>4) Suche oder Titel in Menus nach Irrelevanz ausschließen</td>
</tr>
<tr>
<td>5) Relevante Titel auswählen und ausprobieren</td>
</tr>
<tr>
<td>8) Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Hinweis auf Seitenende und NaviLinks</td>
</tr>
<tr>
<td>2) NaviLinks oder SelectNavipage</td>
</tr>
<tr>
<td>3) Backbutton</td>
</tr>
<tr>
<td>4) NaviLinks oder Tense/Aspect</td>
</tr>
<tr>
<td>5) Tense/Aspect</td>
</tr>
<tr>
<td>6) Seitenhinweise oder Backbutton</td>
</tr>
<tr>
<td>7) Backbutton zu Selectnavi und skip was man schon kennt</td>
</tr>
<tr>
<td>8) Orientierung an Selectnaviliste</td>
</tr>
<tr>
<td>9) Other</td>
</tr>
</tbody>
</table>

12. Welche zusätzlichen Informationen in der CING hättest du dir, für die erste Arbeit (Dez05) mit der CING gewünscht, damit diese Dir leichter fiel? (Assessment of gaps in CING-usage knowledge) Zusammen mit Frage 13 kategorisiert, weil sich die Themen stark überschneiden

<table>
<thead>
<tr>
<th>CING Probleme Dec2005:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Selectbutton auf der Introseite zu auffällig (lädt zu sehr zum klicken ein: Dauss, Voit)</td>
</tr>
<tr>
<td>2) Nicht klar, wie ich wo hin komme, Unübersichtlich/ Nicht alles gleich gefunden (Butter, Mohr, Brandt)</td>
</tr>
<tr>
<td>3) 40 min zu wenig für das erste Mal CING benutzen/ Erfahrungsmglk. Vor erster Nutzung (Kreuzer, Voit, Mohr)</td>
</tr>
</tbody>
</table>
CING Probleme in Interview Session:

a. Feedbacksystem nicht verstanden -> besser erklären (Fröde, Dauss, Brandt,)
b. Sprachmaterial (Beispiele, Übungssätze) zu schwierig -> Wörterbuch anfügen/einfacher gestalten (Hofmann, Fröde,)
c. Continuous nicht klar -> Erklärung der Begriffe Progressive/Continuous; Fröde: „zum Beispiel haben wir in der Schule nie Continuous gehabt“, Butter: „also Continuous da kann ich mir jetzt gar nichts richtiges drunter vorstellen“ (wäre aber nicht hingegangen)
d. Klarer Index der Themen (Dankert: „der dann Missverständnisse wie mit dem Continuous und der Simple Past Seite verhindert“), (Voi)
e. Diagramme überladen und nicht übersichtlich (Günnel: „dann habe ich versucht den Zeistrahl zu erfassen, was nicht ganz einfach war“, Dankert: „) (Dankert und Günnel)
f. Navilinks nicht klar als Links (Dankert)
g. Grammatikstrukturen in Beispielen nicht deutlich genug hervorgehoben (Mohr)
h. Klarere/Ausführlichere Titelbeschreibung (z.B. Background und Foreground) (Mohr, Hofmann, Brandt)
i. SP nicht unter Continuous erwartet -> Hinweis geben, oder anders einordnen
j. Backbutton klarer gestalten (Butter)
k. Theorie oft das gleiche für mich in Worten und Beispielen (Fröde)
l. Für konkrete Probleme nicht hilfreich, weil selber Fehler korrigieren zeitaufwendig ist (Günnel) und man vielleicht auch nicht alles findet, weil es so komplex ist (Kreuzer)
m. Lesen am Bildschirm ist zu anstrengend (Dankert)

CING-Vorteile/Positive Seiten:

i. Material verständlich (Dauss)
ii. Hilfreiches und komplexes Referenztool (vor allem für einen Überblick) (Günnel)
iii. Wenn man sucht findet man Materialien schon! (Butter, Günnel, Hofmann)
iv. Navigationsleiste gut (Voi)
v. Graphiken/Diagramme gut (Brandt: „und diese Graphik finde ich auch nicht schlecht, da kann man sich das bildlich besser vorstellen“)

Was ich mir wünsche:
(zusammengefasst, weil viele sagten: „habe ich eigentlich schon alles gesagt“)
Einteilung der Übungen und des Materials in Schwierigkeitsgrade (Butter, Fröde)
CING im Unterricht einbauen (zum Nachlesen/Referenztool) (Kreuzer)

Additional category –variables / unanswered questions Dec. 2005:

<table>
<thead>
<tr>
<th>Does experience with the CING help working with it?</th>
<th>Alle Kategorien der Frage 4/1</th>
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</thead>
<tbody>
<tr>
<td>3: Struktur/Aufbau bekannt</td>
<td></td>
</tr>
<tr>
<td>4: Feedback klar</td>
<td></td>
</tr>
<tr>
<td>5: Schneller Material finden</td>
<td></td>
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<tr>
<td>6: Genauso</td>
<td></td>
</tr>
<tr>
<td>7: Orientierung besser</td>
<td></td>
</tr>
<tr>
<td>8: Other</td>
<td></td>
</tr>
</tbody>
</table>

| Learners’ non-usage of the Simple Past pages | 1) Simple Past am einfachsten (3/4) |
|---------------------------------------------| 2) PP grösstes Problem (4/4) und es war nicht genug Zeit zum Suchen (3/4) |
|                                             | 3) SP unter Continuous zu finden war eine Hürde (3/4) |
|                                             | 4) Keine Information |
|                                             | 5: Other |

| Learners’ problems with material salience | 1) Alles schwierig (lange kein English) |
|------------------------------------------| 2) Übungssätze kompliziert (Schachtelsätze) (3/4) |
|                                          | 3) Grammatik in den Beispielen nicht klar erkennbar (3/4) |
|                                          | 4) Vielfältigkeit des Materials macht gründliche Arbeit schwierig (was verpasst?) 4/10 |
|                                          | 5) Verständnisprobleme des Materials (Vokabeln) 4/10 |
|                                          | 6) Keine Information |
|                                          | 7) Other |
Appendix C7: Implementation of variable values-test

To ensure interrater reliability of interview results analysis results

R1= Researcher Team; R2= Additional Researcher

<table>
<thead>
<tr>
<th>Subject</th>
<th>Allocation Variable Values (R1 and R2)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3/8 4/1a 4/2 4/3a 4/3b 4/4 4/5 4/5c 4/6a 4/6b 4/7</td>
</tr>
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<td>2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td>
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<td>150506</td>
<td>4 9 3 3 3 3 3 3 4 4 6 6 4 4 6 6</td>
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<td>2 2 4 4 0 0 2 2 8 8 4 4 4 4</td>
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<tr>
<td>200406</td>
<td>8 8 2 2 6 6 5 5 1 1 4 4 6 6</td>
</tr>
<tr>
<td>210406</td>
<td>5 5 2 2 5 5 3 3 5 5 4 4 1a 1a 1 1 1 1</td>
</tr>
</tbody>
</table>

Additional Information: Question 5 not included, as it was defined and answered through CING-user-observation.

Erst durch Ihre Fragebogenergebnisse (erster und zweiter Fragebogen) wird es erst möglich die Vor- und Nachteile des Programms einzuschätzen, was unverzichtbar für die Zukunft der CING ist. Alle diese gesammelten Daten werden natürlich anonym und nur zu Forschungszwecken verwendet und haben keinen Anteil an Ihrer Punktezählung. Diese setzt sich nur aus den Ergebnissen ihres ersten und zweiten Grammatiktests zusammen, also folglich aus Ihrer gründlichen Arbeit mit der InternetGrammar. Ihr Weg durch die CING (Seiten, Zeitaufwand) wird anonym aufgezeichnet, um ein realistisches Bild über die Bearbeitbarkeit der CING zu erhalten und darum die zukünftigen Verbesserungen an tatsächlichen Schwachstellen anzusetzen.

Auf dieser Basis kann eine spätere sinnvolle Veränderung und Verbesserung der CING stattfinden, um zukünftigen Generationen von Lernern selbstgeleitetes, angewandtes Lernen zu ermöglichen.

Mit ihrer Unterschrift bestätigen, Sie dem oben beschriebenen Forschungsvorgang zuzustimmen.

Für gute Ergebnisse in allen Teilen dieser Sitzung, bitte ich Sie immer selbständig und sorgfältig zu arbeiten. Ich werde im Laufe der Sitzung die ausgefüllten Blätter einsammeln, bitte lassen Sie sich dadurch nicht stören.

Bei unüberwindbaren technischen Problemen können Sie sich an mich wenden.

Bitte schreiben Sie jetzt Ihr URZ Kennzeichen und Ihre Matrikelnummer unter die Zahlenkombination auf dem PostIt am Bildschirm und platzieren Sie dies wieder an den Bildschirm. Dann tragen Sie bitte die Zahlenkombination in die Box auf diesem Blatt* ein. Sie können nun mit den Fragen des ersten Fragebogens (Zu Ihrer Person) beginnen. Sie haben dafür 10 Min Zeit.

Notwendigkeit der Nutzerdatensammlung für die CING Evaluation und Verbesserung.
(Appendix D contin.) CING profile questionnaire (first version, Dec 2004)

-----------------------------
Zu Ihrer Person:

Bitte tragen Sie ihre Zahlenkombination ein:

1) Wie alt sind Sie? (Zahl)

2) Ihr Geschlecht (Bitte kreuzen Sie an): männlich ○ weiblich ○

3) Welche Muttersprache sprechen Sie?
   (Bei Zweisprachigkeit mehrere Antworten möglich)
   Deutsch ○ Andere ○  
   Französisch ○ Italienisch ○ Tschechisch ○ (Bitte beschreiben)

4) a) Welchen Schulabschluss haben Sie?
   ○ Gymnasiales Abitur (Westdeutschland)
   ○ Gymnasiales Abitur (Ostdeutschland)
   ○ Abitur Gesamtschule (West/Ost)
   ○ Abitur West/Ost (Abendgymnasium, Studienkolleg etc.)
   ○ Andere (Bitte beschreiben >)

4) b) Welche Kombination von Abitur - Prüfungsfächern hatten Sie? (Bitte alles zutreffende ankreuzen.)
   ○ Englisch Abi-Hauptfach
   ○ Englisch Abi-Nebenfach
   ○ Abi-Hauptfach andere Sprachen
   ○ Abi-Nebenfach andere Sprachen
   ○ Andere Abi-Hauptfächer (Bitte nur ankreuzen!)

5) Waren Sie jemals länger als 2 Monate im Englischsprachigen Ausland, um Ihre Englischkenntnisse zu verbessern?  
   Ja ○ Nein ○

   a) Falls Ja, wie lange (Monate) und durch welches Programm? (z.b. 4 Monate Schulaustausch oder 6 Mon. Au Pair etc.)

   ○ 8 Monate (oder länger) : High School/ College Schulaustauschschüler
   ○ 6 Mon. – 1 Jahr : Au Pair oder Work and Travel oder Work Camp oder ähnliches
6) a) Wählen Sie das Jahr und die Art ihrer letzten Englischprüfung

- Uni Placement Test 2005
- Uni Placement Test 2004
- Anderer TU Chemnitz Test 2005 (MidTerm Test, Vocabulary Test etc.)
- Offizieller Englischtest (IELTS, CAMBRIDGE Certificate, TOEFL) 2004/2005
- Offizieller Englischtest (IELTS, CAMBRIDGE Certificate, TOEFL) vor 2004
- Anderer Englischtest: Bitte beschreiben: ______________________

6 b) Was war das Ergebnis dieser Prüfung? (z.B. Placement Test: Foundation Course oder TOEFL: 465 Punkte etc.)

- sehr gut
- gut
- befriedigend
- ausreichend
- mangelhaft

7) In welcher Form haben Sie in der Vergangenheit hauptsächlich Sprachen gelernt? (Bitte die 3 Hauptformern ankreuzen!!)

- In meinem Heimatland, mit einem Lehrer im Schul- oder Sprachschulunterricht und hauptsächlich Lehrbüchern (manchmal Sprachkassetten/Computersoftware zum Üben des Hörverstehens/der Vokabeln oder Videofilme).
- In meinem Heimatland oder Ausland der gelernten Sprache (Praktikum oder Arbeit), ohne Lehrer/Sprachschule durch den Kontakt mit Einheimischen und eigenen Sprachlernmitteln: Grammatikbuch, Wörterbuch, Computersoftware und/oder Internetsprachlernprogrammen (alle für Grammatikübungen, -regeln, Vokabeltrainer, Text-, oder Audiobeispiele der Sprache)
- Im Ausland der gelernten Sprache, durch den Besuch von Sprachschulen (Wochen oder Monate)
- Andere: bitte beschreiben ________________

8) Wie bewerten Sie den Einsatz von Computern als zusätzliches Hilfsmittel beim Sprachlernen?

- gut
- schlecht

9) Wofür verwenden Sie das Internet hauptsächlich? (Mehr als eine Anwort möglich!)

- Für eMails: schreiben und verwalten (abspeichern, ordnen);
  Senden von e-cards (Virtuelle Postkarten)
- Für meine Büchersuche im Bibliothekskatalog (z.B. Opac-Katalog)
- Für Internetauktionen wie ebay.de, sperrmüll.de oder zum Einkaufen (z.B. amazon.de, autoscout.de, mobile.de, andere Internetshops, etc.)
- Als Informationsquelle in Form von Zeitungen im Internet (Spiegel-online, Net-zeitung, Zeit.de, etc.), die ich lese.
- Für Veranstaltungen (Konzerte, Ausstellungen, etc.) oder Reisen/Flügen (z.B. Last Minute). Suchen und Buchen.
- Als Informationsquelle für wissenschaftliche Artikel, wissenschaftliche Arbeiten und Lehrangebote (Kurse wie Summer Schools) an anderen Universitäten, Inland und Ausland.
10) Wie viel Spaß macht es Ihnen die Englische Sprache zu erlernen?
- sehr viel
- viel
- mittelmäßig
- wenig
- gar keinen

11) Wie wichtig ist es Ihnen in der Zukunft gut in English kommunizieren zu können?
- sehr wichtig
- wichtig
- mittelmäßig
- nicht wichtig
- gar nicht wichtig

Grammatische Begriffe des Englischen

12) Bitte beschreiben Sie kurz aber genau den Unterschied zwischen dem Simple Past und dem Present Perfect.

13) Sie sehen eine Liste von Kapitelüberschriften/-titeln eines Englisch-Grammatikbüchs.
Kreuzen Sie bitte alle Überschriften an, die ihrer Erwartung nach das Simple Past und/oder das Present Perfect behandeln.

- Speech Time and Reference Time
- Use of the Perfect
- Other Wh-Forms
- Background and Foreground
- Change of Meaning
- Present Perfect 1
- For + other tenses
- Since: Problem
- Conditional Structures
- For + Present Perfect
- Perfect in Context

14) a) Haben Sie schon mal mit der Chemnitz InternetGrammar gearbeitet?
- Ja ○
- Nein ○

   b) Falls Ja, wie oft? (Bitte ankreuzen!)
- 1 Mal
- 2 – 5 Mal
- 6 – 15 Mal
- Mehr als 15 Mal

Wenn Sie mit dem Fragebogen fertig sind, legen Sie die Blätter mit dem Text nach unten rechts neben die Tastatur.
Es ist nun Deine Aufgabe, die folgenden Fragen zu Deiner Person, sorgfältig und ehrlich zu beantworten.

Alle Daten werden anonym behandelt und nur zu Forschungszwecken verwendet. Sie helfen die möglichen Aktivitäten mit der CING zu untersuchen und das Programm zukünftig sinnvoll für selbstgeleitete Lernsituationen einzusetzen.

Bitte trage deine Zahlenkombination ein:

1) Wie alt bist Du? (Zahl) 

2) Du bist…..: männlich ○ 1 weiblich ○ 2

3) Welche Muttersprache sprichst Du?  
   Deutsche ○ 1 Andere ○ Other  
   (Bei Zweisprachigkeit mehrere Antworten möglich)
   - Deutsch ○ 1
   - Französisch ○ 2
   - Italienisch ○ 3
   - Tschechisch ○ 4
   (Bitte eintragen)

4) In deinem Abitur hattest du Englisch als……. ?
   ○ Abi-Hauptfach 1
   ○ Abi-Nebenfach 2
   ○ gar nicht 3

5) Wieviele Jahre hattest du Englischunterricht in der Schule?
   ○ weniger als 4 Jahre 1
   ○ zwischen 4 und 5 Jahren 2
   ○ zwischen 6 und 7 Jahren 3
   ○ länger als 7 Jahre 4

6a) Warst Du jemals länger im englischsprachigen Ausland, um deine Englischkenntnisse zu verbessern?  
   Ja ○ 1 Nein ○ 2

b) Falls Ja, wähle die Antwort, die am besten zu deiner längsten Auslandserfahrung passt.
   ○ 6 Monate (oder länger) : High School/ College Austauschschüler 1
   ○ 6 Mon. – 1 Jahr : Au Pair oder Work and Travel, Work Camp o. ä. 2
   ○ 3-5 Monate : Au Pair oder WorkandTravel, Work Camp o. ä. 3
   ○ 1 Woche – 2 Monate: Schulaustausch, Besuch einer Sprachschule oder Privaturlaub 4
7) a) Wann und Was war deine letzte Englischprüfung (die Grammatik testete)? (Wähle die beste Antwort!)

- TU Chemnitz Placement Test 2005 1
- TU Chemnitz Placement Test 2004 2
- Offizieller Englischtest (IELTS, CAMBRIDGE Certificate, TOEFL) vor 2004 4
- Anderer Englischtest: (Bitte eintragen!): __________________ Other

7 b) Was war das Ergebnis dieser Prüfung?

- ILC 2 1
- ILC 1 2
- Foundation Course 3
- Nicht bestanden 4
- Anderes Ergebnis: (z.B. Punkte für IELTS, TOEFL, etc. bitte eintragen) __________ Other

8) Wie hast du in der Vergangenheit hauptsächlich Sprachen gelernt?

- Mit einem Lehrer im Schul- oder Sprachschulunterricht durch Lehrbücher (manchmal Sprachkassetten/Computersoftware oder Videofilme zum Üben). 1
- Ohne Lehrer/Sprachschule durch den Kontakt mit Muttersprachlern und eigenem Material: Grammatik-/Wörterbuch, Sprachlernsoftware etc. 2
- Anders: bitte beschreiben _____________ 3

9) Wie gerne arbeitest du mit Computern (Studium und Freizeit)

- sehr gerne 1
- gerne 2
- teilweise gerne 3
- nicht gerne 4
- gar nicht gerne 5

10) Wie häufig führst du folgende Tätigkeiten im Internet durch?

a. eMails (schreiben, speichern, ordnen), Weblogs und/oder Diskussionsforen sowie e-cards senden
   sehr häufig 1
   eher häufig 2
   teilweise 3
   selten 4
   sehr selten 5
   Kategorie: eMail

b. Suche nach Studienbüchern im Uni-Bibliothekskatalog (z.B. WebOpac-Katalog)
   sehr häufig 1
   eher häufig 2
   teilweise 3
   selten 4
   sehr selten 5
   Kategorie: WebOpac

c. Besuch von Internetauktionen (ebay.de, sperrmüller.de), zum Einkaufen (amazon.de, mobile.de, andere Internetshops, etc.)
   sehr häufig 1
   eher häufig 2
   teilweise 3
   selten 4
   sehr selten 5
   Kategorie: Shopping, Auktionen

d. Suche nach Veranstaltungen (Konzerte, Ausstellungen, etc.) oder Reisen/Flüge (z.B. Last Minute; auch buchen von Reisen und Veranstaltungstickets)
   sehr häufig 1
   eher häufig 2
   teilweise 3
   selten 4
   sehr selten 5
   Kategorie: Events, Tickets

e. Suche nach wissenschaftlichen Artikeln/Arbeiten/Lehrangeboten (z.B. Summer Schools) an anderen Universitäten (In- und Ausland)
   sehr häufig 1
   eher häufig 2
   teilweise 3
   selten 4
   sehr selten 5
   Kategorie: wissenschaftliche Suche

11) Wie wichtig ist Dir im Moment (in diesem und im kommenden Semester) der erfolgreiche Abschluss deiner Sprachpraxiskurse über die englische Grammatik?

- sehr wichtig 1
- wichtig 2
- teilweise wichtig 3
- nicht wichtig 4
- gar nicht wichtig 5
12) Wie wichtig ist es Dir momentan grammatikalisch korrektes English im Gespräch mit englischen Muttersprachlern (Freizeit/ mit Freunden) zu sprechen?

   - sehr wichtig 1
   - wichtig 2
   - mittelmäßig 3
   - nicht wichtig 4
   - gar nicht wichtig 5


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<th>Überschrift</th>
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<td>Other Wh-Forms (-F 3)</td>
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14a) Haben Sie schon mit der Chemnitz InternetGrammar gearbeitet?

   - Ja ○ 1
   - Nein ○ 2

14 b) Falls Ja, wie oft? (Bitte ankreuzen!)

   - 1 Mal 1
   - 2 – 5 Mal 2
   - 6 – 15 Mal 3
   - Mehr als 15 Mal 4
Appendix E: CING experience questionnaire (second version, May 2005)

Questionnaire items

Probanden bewerten die folgenden Aussagen, vor dem Hintergrund ihrer eigenen CING-Arbeit, mit Hilfe einer 5-schrittigen Likert-Skala. (Stimme vollkommen zu 1 – 2 – 3 – 4 – 5 Stimme gar nicht zu).

1) Salienz der Struktur:

11) Wie das Simple Past und Present Perfect angewendet und gebildet werden, wurde in den CING Regelerklärungen und Beispielsätzen klar hervorgehoben.
12) Durch die Beispielsätze und Regeln konnte ich die Bildung und Anwendung der Zeitformen gut verstehen.
13) Das Lernen der Grammatik (Anwendung im Satz/Bildung) funktionierte gut, wegen der deutlichen Präsentation der Strukturen in den Regeln und Beispielsätzen der CING.
14) Das CING-Grammatikmaterial (Regeln/Beispiele) zeigte mir nicht eindeutig, wie ich die Zeitformen anwenden muss oder bilde, weil diese darin nicht genug hervorgehoben wurden.
15) Beim Lernen der Grammatik halfen die Beispielsätze und Regelerklärungen meinem Verständnis nicht, da sie die Bildung der Grammatik nicht klar zeigten.

2) Verständliches Vokabular

16) Ich verstand die Anwendung der Grammatikstrukturen gut, da die Beispielsätze einfach und verständlich formuliert waren.
17) Die Anwendung der Zeitformen in Sprachbeispielen zu verstehen oder Übungsaufgaben zu machen, war durch die schwierigen Vokabeln in den Sätzen (Beispiel- und/oder Übungssätze) nicht einfach.
18) Die Vokabeln der Beispiel- und Übungssätze waren nicht immer leicht für mich zu verstehen- daher halfen die Sätze nicht, die Anwendung des Simple Past und/oder Present Perfect besser zu verstehen.
19) Die einfache und verständliche Formulierung der Sätze in den Beispielen und Übungsaufgaben half mir, die Anwendung der Zeitformen gut zu verstehen.
20) Die Beispielsätze sowie die Übungssätze halfen mir, die Anwendung der Regeln zu verstehen, weil sie verständlich geschrieben waren und einfache Vokabeln enthielten.

3) Verständliche Thementitel

- Die Thementitel der CING zeigten mir deutlich, wo ich welches Grammatikthema finden konnte.
- In der CING konnte ich die Materialien (Regeln, Beispielsätze, Übungen) zum Simple Past und/oder Present Perfect leicht finden, weil die Thementitel gut verständlich waren.
- Die eindeutigen Thementitel erleichterten meine Suche nach relevantem Grammatikmaterial in der CING.
- Es war schwierig, die Seiten zum Simple Past und/oder Present Perfect zu finden, die man suchte, weil die Thementitel unklar waren.
- Die Thementitel waren für mich unverständlich, und zeigten mir nicht, wo in der CING ich welches Grammatikmaterial finden konnte.
4) Verständliche Metasprache

- Durch die schwierigen Grammatikbegriffe in den Grammatikregeln, hatte ich Probleme die Regeln zu begreifen. (Veränderung des Items zur Alpha-Verbesserung.)
- Die Anwendung der Grammatik war gut zu verstehen, weil die Erklärungen der Regeln und die Grammatikbegriffe darin gut verständlich für mich waren.
- Die Erklärungen der Grammatikregeln und die Grammatikbegriffe waren nicht kompliziert formuliert und halfen meinem Verständnis der englischen Grammatik.
- Die Grammatikregelerklärungen und Grammatikbegriffe verstand ich gut, weil sie unkompliziert geschrieben waren.

5) Feedback:

- Die Fehlerrückmeldungen zu meinen Übungsaufgaben waren klar und deutlich präsentiert.
- Durch die Fehlerrückmeldungen konnte ich meine Fehler gut korrigieren und verstehen.
- Durch die Fehlerrückmeldungen zu meinen bearbeiteten Übungsaufgaben verstand ich, warum meine Antworten falsch waren.
- §. (Durch Weglassen produziert dieses Item einen merklich besseren Cronbach-Alpha Wert. Änderung: Durch die unübersichtliche Präsentation der Fehlerrückmeldungen zu den Übungsaufgaben, halfen mir die Rückmeldungen nicht bei der Korrektur meiner Fehler.)
- Die Fehlerrückmeldungen zu den gelösten Übungssätzen halfen mir nicht, meine Fehler zu verstehen oder zu korrigieren.
Feedback = Fehlerrückmeldungen

6) Autonomes Lernen

- Ich lerne Grammatik gut mit der CING, weil ich mir die Grammatikregeln und Sprachbeispiele öfter und länger ansehen kann.
- Da ich die Regeln mehrmals durchlesen kann und das Simple Past und/oder Present Perfect in Übungen oft anwenden kann, ist die CING sehr hilfreich für mein Lernen.
- Grammatiklernen mit der CING fällt mir nicht leicht, weil das Programm mir nicht genau sagt, was ich lernen muss und wie oft ich dies üben soll.

Appendix F: Declarative computer knowledge questionnaire (TECOWI)

**Fragenbogen zu theoretischem Computerwissen (TECOWI)** (adapted from Naumann and Richter 2001)

Dieser Fragebogen bezieht sich auf sogenanntes theoretisches Wissen über den Computer, d.h. eher „theoretisches“ Wissen, das nicht unmittelbar praktisch relevant für den normalen Umgang mit dem Computer ist. Auf dieser und den folgenden vier Seiten finden Sie 13 Begriffe und Abkürzungen, für deren Bedeutung jeweils vier Alternativen angegeben sind. Hier ein Beispiel:

<table>
<thead>
<tr>
<th>1. „PGP“</th>
<th>(a) E-Mail Programm</th>
<th>(b) Abkürzung für Pretty Good Privacy</th>
<th>(c) Abkürzung für Private GNU Policy</th>
<th>(d) Standard zur Übertragung von Dateien aus dem Internet</th>
<th>weiß ich nicht</th>
</tr>
</thead>
<tbody>
<tr>
<td>###</td>
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</tbody>
</table>


<table>
<thead>
<tr>
<th>1. „Modem“</th>
<th>(a) „Modulationsemulator“ (Teil der CPU, der den Takt der Recheneinheit synchronisiert)</th>
<th>(b) „Modulator/Demodulator“ (Digital/Analogwandler zur Datenübertragung zwischen Computern über Telefonleitungen)</th>
<th>(c) „Modest Emergency“ (Abkürzender Terminus für Computerabstürze ohne Datenverlust)</th>
<th>(d) „Modestly Damaging Email“ (Email, die Viren mit wenig schädigender Wirkung auf die Festplatte überträgt).</th>
<th>weiß ich nicht</th>
</tr>
</thead>
<tbody>
<tr>
<td>###</td>
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</tbody>
</table>

###
2. „Browser“

(a) Ein Programm, mit dem man WWW-Seiten von WWW-Servern abrufen und auf dem Bildschirm darstellen kann.

(b) Ein Programm, mit dem man HTML-Dokumente erstellen und anzeigen kann

(c) Ein Hilfsprogramm bei der Internetnutzung, das besonders zur Darstellung von Bildern geeignet ist

(d) Ein Programm, mit dem Recherchen im Internet durchgeführt werden können.

weiß ich nicht

3. „Link“

(a) Verknüpfung zwischen Dateien, die auf unterschiedlichen, an das Internet angeschlossenen Rechnern liegen

(b) Verknüpfung zwischen zwei oder mehreren Rechnern mit Internetzugang

(c) Markierte Stelle in einem computerbasierten Dokument, die bei Aktivierung ein anderes Dokument aufruft.

(d) Hinweis auf besonders wichtige Informationen in einem WWW-Dokument

weiß ich nicht

4. „CD-ROM“

(a) Abkürzung für Compact Disc – Read Overwrite Maintain

(b) Optisches Speichermedium für die dauerhafte Speicherung großer Datenmengen

(c) Magnetisches Speichermedium für die dauerhafte Speicherung großer Datenmengen

(d) Andere Bezeichnung für CD-Player

weiß ich nicht
5. „HTML“

| (a) Verschlüsselungsmechanismus für E-Mail | ______ |
| (b) Einheitlicher Code für E-Mail | ______ |
| (c) Abkürzung für *Hyper Tool Media Listing* | ______ |
| (d) Beschreibungssprache für WWW-Seiten | ______ |
| *weiß ich nicht* | ______ |

6. „Java“

| (a) Ein Programm, das automatisch WWW-Seiten abruft um sie auszuwerten | ______ |
| (b) Ein WWW-Browser unter Windows | ______ |
| (c) Eine Programmiersprache, mit der man Programme zur Übertragung an WWW-Browser erstellen kann | ______ |
| (d) Protokoll, mit dem Dateien aller Art im Internet übertragen werden können. | ______ |
| *weiß ich nicht* | ______ |

7. „ASCII“

| (a) Protokoll, das für die Übertragung von News benutzt wird | ______ |
| (b) Bezeichnung des ersten graphischen WWW-Browsers | ______ |
| (c) Abkürzung für *American Standard Code for Information Interchange* | ______ |
| (d) Veraltetes Dateiformat für Textdateien | ______ |
| *weiß ich nicht* | ______ |
8. „Suchmaschine“
(a) Spezieller Roboter zum selbstständigen Auffinden von definierten Gegenständen (aus der KI-Forschung)
(b) Spezieller Hochleistungsscomputer zum Durchsuchen des Internet
(c) Programm zum Auffinden von Dateien auf einem Computer
(d) Internet-Datenbank zum Auffinden von Informationen im WWW

9. „FTP“
(a) Standard für die Infrarot-Übertragung mit Notebooks
(b) Abkürzung für „Firewall Transfer Permission“
(c) Abkürzung für File Transfer Protocol
(d) Sammelbegriff für virtuelle Kommunikationsformen

10. „Streamer“
(a) Wiedergabegerät für Sound-Dateien
(b) Hilfsprogramm für die Erstellung von Sound-Dateien
(c) Magnetisches Band-Speichermedium zur Sicherung von Computerdaten
(d) Programm zur Suche von Dateien in lokalen Netzwerken

weiß ich nicht
11. „MUD“  
(a) Chat-Abkürzung für *Many Users’ Dream*  
(b) Abkürzung für *Multi User Dungeon*  
(c) Abkürzung für *Merge Utility Driver*  
(d) Verschlüsselungstechnik des amerikanischen Militärs  
*weiß ich nicht*

12. „Celeron“  
(a) Name einer Firma, die Graphikkarten herstellt  
(b) Veraltete Programierungsprache für das Internet  
(c) Intel-Prozessortyp ohne 2nd-Level-Cache-Speicher  
(d) Halbleitermaterial zur Herstellung von Computerchips  
*weiß ich nicht*

13. „Hypertext“  
(a) Text, der viele Hybermedia-Elemente enthält  
(b) Test, aus dem man zu verwandten Dokumenten, Textteilen oder Informationen springen kann  
(c) Markierte Stelle in einem computerbasierten Dokument, die bei Aktivierung ein anderes Dokument aufruft  
(d) Datenbankensystem für Großbibliotheken  
*weiß ich nicht*
Appendix G1: Interview guide (April 2005)

Guiding questions for the researcher

Datum: _______________ Lerner: _______________

Diese Sitzung wird nicht länger als 1 h dauern und ich werde alle Schritte vorher genau erklären, solltest Du trotzdem Fragen haben, zögere bitte nicht sie sofort an mich zu stellen.
Hast du vorab schon eine Frage an mich?

Wir werden die Sitzung mit dieser Kamera (hinweisen) aufzeichnen, wobei aber nur der Bildschirm gefilmt wird, und von unserem Gespräch wird nur der Ton aufgenommen. Das wird mir bei der Bearbeitung der Resultate helfen und die Aufzeichnung wird anonym und nur für die Forschung behandelt. Wenn du mit diesem Vorgang nicht damit einverstanden bist, bitte sage es mir jetzt.

Ich erkläre Dir jetzt mehr zur Sitzung und ihres Ziels:

Das Ziel der Sitzung ist es, Deine Erfahrungen mit der CING in Verbindung mit Deinem Grammatikwissen und einigen anderen Informationen zu Deiner Person zu vergleichen, um die CING so nutzerfreundlich wie möglich zu gestalten. Es gibt nichts, was du in den nächsten 60 min falsch machen kannst, alles ist hilfreich für uns. Die kommenden 60 min sind in 4 Schritte eingeteilt und wenn Du keine Fragen mehr hast, schlage ich vor, wir fangen mit dem ersten Schritt an.

Das hier ist ein Grammatiktest zu Deinem Wissen über die „Korrekte Anwendung des Simple Past und Present Perfekt“. Du hast 8 min für die Bearbeitung, bitte arbeite so sorgfältig wie in einer echten Testsituation. Fange jetzt bitte an!

Die 8 Min sind nun um, Du kannst mir jetzt das Testblatt geben.

Kommen wir zum zweiten Schritt der heutigen Sitzung (TECOWI).

Das hier ist ein Fragebogen über Deine Erfahrungen mit Computern. Er hilft uns zu erkennen, ob Lerner für die CING spezielle Fähigkeiten benötigen. Bitte lese die Einleitung sorgfältig und beantworte alle Fragen so gut Du kannst. Du hast ganze 10 min Zeit dafür, also überlege gut, bevor Du eine Frage beantwortest- Du hast genug Zeit.

Die Zeit ist nun vorbei und Du kannst mir den Fragebogen geben.

Es folgt der dritte Schritt dieser Sitzung, für den ich zuvor noch einige Informationen von Dir benötige: (2 min)

| 3/1) Hast Du seit der letzten Forschungssitzung noch mal mit der CING gearbeitet? | Ja | Nein |
| 3/2) Wie oft ungefähr? | Zahl |
| 3/3a) Wie viele Stunden Englisch-Grammatikunterricht (in der Woche) hattest Du dieses Semester (ungefähr)? Wie hieß der Sprachkurs den du an der Uni besucht hast? | Stunden FoundCourse ILC 1: practice ILC2: no practice |
| 3/3b) War das SimplePast und/oder Present Perfect auch Inhalt des Unterrichts? | Ja TW Nein |
| 3/4) Aus Deiner Erinnerung an die Forschungssitzung im Dezember letzten Jahres, was war für Dich das schwierigste in der Sitzung? | - CING - Tests - Fragebögen - Other - Weiss Nicht (WN) |
| 3/5) Und was war besonders leicht für Dich? | - CING - Tests - Fragebögen |
Bereite Dich jetzt mit der CING auf einen Grammatiktest (ähnlich wie der vorherige) zur korrekten Anwendung des **Simple Past** und **Present Perfect** vor. Der Test wird am Ende der Sitzung stattfinden. Solltest du Fragen haben, kannst du mich sofort fragen. Du hast 15 min Zeit für die Vorbereitung.

Bitte fange jetzt mit der Arbeit an und logge Dich mit dieser (Notizblatt!) Zahlenkombination in die CING ein. Die Zahlenkombination (alle Zeichen) ist **Username** und **Passwort**!

Die 15 min sind nun vorbei, (höre bitte auf zu arbeiten) (Stopp!) - Logge dich jetzt mit dem **roten Logout-Button** aus der CING aus.


Im Folgenden werde ich Dir einige Fragen zu deiner gerade erfolgten Arbeit und deinen Erfahrungen mit der CING stellen. Die Fragen, die ich Dir im Verlauf stelle, beziehen sich alle auf **Deine persönlichen Erfahrungen mit der CING**. Ich logge mich dazu in die CING ein, damit Du mir evtl. zeigen kannst, was Du meinst.

Sollten Dir Dinge oder Probleme mit der CING aufgefallen sein, die ich im Verlauf nicht anspreche, zögere auf keinen Fall sie mir mitzuteilen. *(20 min total)*

---

<table>
<thead>
<tr>
<th>3/6</th>
<th>Hast Du generell Erfahrung im Lernen mit computerbasierten Lernprogrammen wie der CING - die Hypertext haben und selbstgesteuerte Arbeit verlangen?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Ja</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3/7a</th>
<th>Zeige mit Hilfe dieser Skala, wie gut Deiner Meinung nach Dein Wissen über das SimplePast/ Present Perfekt (Anwendung/ Regeln) ist!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Sehr gut</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>3/8</th>
<th>In welchen Bereichen des SP/ PP denkst du, dass Du noch etwas mehr Übung brauchst?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>-Korrekte Anwendung</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4/1</th>
<th>Du hast schon ein bisschen Erfahrung mit der CING: War die heutige Arbeit mit dem Programm einfacher für Dich, als im Dezember 2005? Warum?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Ja</strong></td>
</tr>
<tr>
<td></td>
<td>Warum?</td>
</tr>
</tbody>
</table>
---
<p>| 4/2) Du musstest die CING heute und auch im Dezember ohne Lehrer/Instrukteur nutzen. Bereitete Dir das Probleme? | Ja | Teilweise | Nein | WN |
| Learner problems with autonomous CING use | Warum? |
| 4/3a) Was war deine Aufgabe für die Arbeit in der CING? Was solltest du in der CING tun? | a) | Testvorbereitung |
| Level of Information Specification | Übungen zu Simple Past und Present Perfect machen |
| | Regeln zu Simple Past und Present Perfect nachlesen/lernen |
| | Meine Wissenslücken zu SP/PP schließen |
| | WN |
| | ………… |
| 4/3b) Welche Lernaktivitäten helfen Dir normalerweise (ohne CING) bei der Lösung einer solchen Aufgabe? | b) |
| Level of learner’s task realisation | - Übungen machen |
| | - Regeln lesen |
| | - Beispiele lesen |
| | - Regeln lesen und dann Übungen machen |
| | - Regeln und Beispiele lesen |
| 4/4a) Kannst Du Dich erinnern und mir genau erklären, was Du heute in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? | CING kennenlernen (Intropage, Sitemap, Glossar etc.) |
| Specification of Information Goal: First Step; Goal Setting | Und was hast du dann getan? |
| | Information suchen |
| | (Und wie bist du diese Informationssuche in der CING angegangen/gestartet?) |
| | - Titel |
| | - Inhalte |
| | - Navigationsstruktur |
| b) Gab es Probleme dabei? | Ja | TW | Nein |
| 4/5a) Zeige mir jetzt die Seite, die Du als erstes in der CING besucht und gelesen hast. | - Intropage |
| Idea of knowledge gaps, (Indirectly: Orientation: Knowledge of HT-Structure®) | - Topicpage (SP/PP) |
| | - Placement Test |
| | - ………… |
| 4/5b) Falls Intro/Menu/Site in 5a, welche Themenseite hast Du zu allererst besucht? | Titel: |
| 4/5c) Woran erkennst Du, dass diese Seite relevant für deine Aufgabenbearbeitung ist? | Title | Content | HT-Structure (Menu/Site) |
| Assessment of relevance of found information | Other |</p>
<table>
<thead>
<tr>
<th>4/6a) Und welche Themenseiten haben Dir am besten bei der Aufgabenbearbeitung geholfen? Warum? <strong>Information Assessment: Relevance for task fulfilment, Learning Strategy Selection</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Why?</strong></td>
</tr>
<tr>
<td><strong>Why?</strong></td>
</tr>
<tr>
<td>4/7) Was hast Du dann auf den ausgewählten Seiten getan für Deine Testvorbereitung? <strong>Selection and Application of relevant learning strategy</strong></td>
</tr>
<tr>
<td>- Alles lesen</td>
</tr>
<tr>
<td>- Lesen was ich noch nicht kenne</td>
</tr>
<tr>
<td>- Nur Beispiele lesen</td>
</tr>
<tr>
<td>- Nur Regeln lesen</td>
</tr>
<tr>
<td>- Übungen machen</td>
</tr>
<tr>
<td>- ............</td>
</tr>
<tr>
<td>4/8a) Kannst Du mir Seiten in der CING zeigen, die nicht relevant für Deine Aufgabe sind, oder auf die Du gestoßen bist und dann realisiert hast, dass sie nicht relevant sind? <strong>Information Assessment: CING page titles/content</strong></td>
</tr>
<tr>
<td>4/8b) Warum sahen die für dich relevant aus? <strong>Problems with Information Assessment: CING page titles/content</strong></td>
</tr>
<tr>
<td>4/9) Zeige mir auf dieser Skala, wie schwierig es für dich war relevante Seiten in der CING zu erkennen. <strong>Sehr Schwer 1 - 2 - 3 - 4 - 5 Sehr Leicht</strong></td>
</tr>
<tr>
<td>4/10a) Bereitete Dir die CING Probleme während deiner Aufgabenbearbeitung bzw. Testvorbereitung?</td>
</tr>
<tr>
<td>4/10b) Welcher Art?</td>
</tr>
<tr>
<td>4/12) Welche zusätzlichen Informationen in der CING hättest Du Dir für die erste Arbeit (Dez05) mit der CING gewünscht, damit diese Dir leichter gefallen wäre? Assessment of CING-usage problems</td>
</tr>
<tr>
<td>Klaren Index</td>
</tr>
<tr>
<td>Search-Field</td>
</tr>
<tr>
<td>4/13a) Gibt es etwas, das Dir in dieser Sitzung an der CING aufgefallen ist, du aber noch nicht erwähnt hast? (auch wenn es Dir noch so unwichtig scheint).</td>
</tr>
<tr>
<td>4/13b) Was wünschst Du Dir für die CING, damit die Arbeit/das Lernen mit dem Programm leichter wird?</td>
</tr>
</tbody>
</table>
# Appendix G2: Interview questions and answer categories (April 2006)

## Categorised interview results

### Information Specification

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer Categorisation:</th>
<th>Explanation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1) “Du hast schon ein bisschen Erfahrung mit der CING: War die heutige Arbeit mit dem Programm einfacher für dich, als im Dezember 2005? <strong>CING Experience helps usage? Understanding of CING and its HT-Structure</strong></td>
<td>Y/N</td>
<td>1) CING Structure was clearer/ Better orientation in 06 2) Knew how to work with the CING (Material, Exercises) 3) As difficult as in Dec05- too long break 4) Improv. English lang./gram. knowledge helped (titles, material) 5) Intropage still confusing</td>
</tr>
<tr>
<td>4/3) Erkläre mir nochmals in deinen eigenen Worten, was deine Aufgabe in der CING war/ was solltest Du tun? <strong>Specification of Information Goal: Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/7) Zeige mir mit Hilfe dieser Skala, wie gut Deiner Meinung nach dein Wissen über das Simple Past/ Present Perfekt (Anwendung/Regeln) ist: <strong>Self-Assement: Simple Past/ Present Perfect Knowledge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/8) In welchen Bereichen des Simple Past und Present Perfect denkst du, dass du noch etwas mehr Übung brauchst? <strong>Self-Assement: Simple Past/ Present Perfect Knowledge</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*QuestionDocu:* We expect learners with CING experience to perform more confidently/better in April than in Dec. as they might better understand the CING HT-Structure, which is necessary for an adequate specification of information.

*Answer Categorisation:*

1. Focussed specification of information goal (includes self-assessment)
2. Appropriate Specification of information goal (no self-assessment)
3. Weak specification of information goal (no self-assessment and only general focus on learning topic(s))

*QuestionDocu:* Theory of information specification requires an adequate specification of the task to form an adequate information goal, to guide learners’ learning

*Answer Categories:*

1. Usage Practice SP and PP
2. Usage Practice PP
3. Keywords SP and PP usage
4. Revision of exceptions
5. Distinguish SP from PP usage or SP/PP usage from other Past Tenses

*QuestionDocu:* Adequate specification of information requires learners to have an idea about their own knowledge gaps: Here we investigate their general idea

*Answer Categories:*

Likert Skale:

*QuestionDocu:* Theory of Information Specification requires idea about own knowledge gaps for specification of information goal: more precise idea- knowledge gap in rules or usage in context

*Answer Categories:*

1. Usage Practice SP and PP
2. Usage Practice PP
3. Keywords SP and PP usage
4. Revision of exceptions
5. Distinguish SP from PP usage or SP/PP usage from other Past Tenses
| 4/3c) | 6) Ability to explain of rules for SP and PP  
7) Understand Continuous |
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<td><strong>DELETED as no one answered</strong></td>
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</tbody>
</table>

| 4/4a) Kannst Du dich erinnern und mir genau erklären, was du in der CING als erstes getan hast, um die Aufgabe, die ich Dir gab, zu erfüllen? |
| **Adequate Specification of Information Goal: First level of specification** |
| **QuestionDocu:** | a) Theory of information specification is based on learner understanding of CING material (titles)- one way to show this understanding (direct way to relevant or irrelevant material, selfguided or CING guided) |
| **Answer Categories:** | • Read Intro page (how does the CING work?) (Dauss/Fröde)  
• Via Menu: Tense/Aspect directly to Simple Past  
• Via Menu:Tense/Aspect directly to Present Perfect  
• Via Menu:Tense/Aspect directly to irrelevant pages  
• Follow the CING hierarchy of pages  
• Follow the titles with the word “Perfect” / “Present”  
• Get an overview |

| 4/4b) Gab es Probleme dabei? |
| **Do CING-Problems hinder learners’ first specification?** |
| **QuestionDocu:** | If the CING hinders this first level of specification, following CING-problems can be allocated to base in the CING or in the learner? |
| **Answer Categories** | 1: Y  
2: N  
Explanation  
1) Fail to find SP pages, only after trialing/ searching deeper  
2) Keywords of SP and PP in the titles helped to find material  
3) Clearer titles hint on Simple Past |

| 4/5a) Zeige mir jetzt die Seite, die du als erstes in der CING besucht und gelesen hast. |
| **Adequate Specification of Information Goal: First page selection (Understanding CING HT-Structure)** |
| **QuestionDocu:** | The adequate specification of Information Goal requires a learner understanding of CING HT-Structures and its titles. Navigation to irrelevant pages shows a lack of this necessary understanding and can lead to a very inefficient usage of the CING.  
A visit to the relevant Intropage hints on a need for security and support in the CING. |
| **Answer categories:** | Use of Perfect-Expl/ Disc (rel)  
Simple Past Expl (rel)  
Simple vs Contin (irrel)  
Intropage  
or  
Relevant (Use of Perfect Expl/Disc, Simple Past Expl)  
Irrelevant (Simple vs Continuous)  
Intropage |

| 4/5b) Welche Themenseite? |
| **Adequate Specification of Information Goal: First page** |
| **QuestionDocu:** | Specification of Information Goal requires a learner understanding of CING HT-Structure and its titles. Navigation to irrelevant pages shows a lack of this |
| Learner navigation strategy in the CING: Start of CING usage | QuestionDocu: For an adequate information search to happen (in information specification) learners have to be able to understand the HT-structure (of the CING) and use navigational aids effectively to move into the structure. The kind of navigational aids they use can provide information on understanding of the HT-structure (and comfort to move freely). Answer Categories: a) read Intro Page b) ContentMenu Tense/Aspect c) Use the Search field d) Choose the most relevant (to your task) titles/links e) Check the page content to see if content is relevant f) Trial pages to get an overview of the contents g) Discovery/Explanation/Exercises are self-explanatory h) Discovery/Explanation/Exercises can be understood from the intropage (Fröde) i) follow the CING page hierarchy j) “Past”/”Present” are meaningful and obviously related to the task (Butter) |
| Learner navigation strategy: inside the CING structure | QuestionDocu: An even stronger focus on the efficient use of navilinks while moving within the CING-HT. Learner usage style of links hints at different navigation patterns: deep into the structure and staying on the surface, use all pages given vs select pages most relevant to learning needs/goals… Answer Categories: a) Follow the hints at bottom of CING content pages b) Use the Navilinks-bar c) BackButton to SelectNavi for an overview of the other topic pages d) BackButton to SelectNavi and choose next (relevant) page in the hierarchy e) Choose pages that help you solve your problems with certain grammar structures first, then pages on content you already know f) < and >> tell me the Navilinksbar brings me to other topics further down the hierarchy g) Via Menu and Tense/Aspect With navilinks, they show the structure of the pages, so I follow this structure h) with the help of the Corresponding Pages link i) If you know exactly what you are looking for, you don’t need to follow the structure (Guennel??) k) work through all pages given l) the CING hierarchy is a logical organisation of pages, thus a good orientation Butter: considers Navilinks to show a different set of pages than SelectNavigation page- another source for... |
| 4/6a) Welche Themenseiten haben Dir am besten bei der CING Vorbereitung geholfen? | QuestionDocu: Adequate Specification of Information requires the learner to assess visited material and its importance/relevance to his learning/information goal. Including own gaps of knowledge shows a very relevant/focussed information assessment to his learning goal. A general account of assessment without particular topic focus on the other hand, can be considered less relevant to the information goal.

Answer Categories:
1) Information Assessment
   a) very relevant (IA strongly guided by own knowledge gaps)
   b) relevant (general with guidance by learning strategy/knowledge gaps)
   c) general (without particular focus on own knowledge gaps, learning strategy or task requirement)
   d) irrelevant
   e) learning strategies were disabled due to Research situation (Dankert)

| 4/9) Zeige mir auf dieser Skala, wie schwierig es für dich war relevante Seiten in der CING zu erkennen. | QuestionDocu: General self-assessment of learner’s ability to assess title relevance shall give an idea of their ability to realistically assess their CING-usage competence. This compared to their actual CING-performance will hint at necessary learner preparation for those who overestimate their ability.

Answer Categories:
Likert-Scala
Very Good 1-2-3-4-5 Very Bad

| 4/8a) Kannst Du mir Seiten in der CING zeigen, die nicht relevant für deine Aufgabe waren, die du aber zuerst für relevant gehalten hast? | QuestionDocu: Adequate Specification or information relevant in the CING requires learners to assess CING page titles correctly. A learner, who can assess page relevance quickly through the titles, is more likely to move easy and quickly between his selected/relevant topics, than someone who has to search the content of a page first, to be able to decide about the page relevance.

Answer categories:
1) Assessed irrelevant info as relevant = bad assessment
2) Assessed irrelevant info irrelevant
3) Considers page content check necessary to be 100% sure about relevance/irrelevance of the page (Kreuzer)
4) Irrelevant pages can help to get an overview (if there is a lot of time) (Voit)

<table>
<thead>
<tr>
<th>(Title/Content) and Relevance to task</th>
<th>Answer Categories:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Confuses grammatical structures and/or terms</td>
<td></td>
</tr>
<tr>
<td>b) Structure in the page content proves irrelevance to student</td>
<td></td>
</tr>
<tr>
<td>c) Mislead by term “Past” in the page title</td>
<td></td>
</tr>
<tr>
<td>d) Mislead by unclear title thus trials the page</td>
<td></td>
</tr>
<tr>
<td>e) Can distinguish Continuous from Simple forms</td>
<td></td>
</tr>
<tr>
<td>f) Can distinguish “Continuous” from other task topics</td>
<td></td>
</tr>
<tr>
<td>g) Cannot distinguish “Continuous” from other task topics</td>
<td></td>
</tr>
<tr>
<td>h) Check of pages is necessary for me to make a final decision on page’s relevance</td>
<td></td>
</tr>
<tr>
<td>i) If you know what you need, you can easily what is relevant and irrelevant</td>
<td></td>
</tr>
<tr>
<td>j) Not clear if he can distinguish Continuous from Simple forms (Kreuzer)</td>
<td></td>
</tr>
<tr>
<td>k) Content helped her with correct assessment</td>
<td></td>
</tr>
</tbody>
</table>

**Self-Learning Strategies**

4/2) “Du musstest die CING heute und auch im Dezember ohne Lehrer/Instruktor nutzen. Bereitet Dir das Probleme?**

**Learner’s comfort with CING-Self-guided learning**

**QuestionDocu:** Successful Self-Learning requires learners to be comfortable with learning with the tool by themselves OR that the CING doesn’t cause problems to learners’ self-learning experiences

**Answer Categories:**

Y/N

**Explanation:**

1) After a short trial through the CING its easy
2) Task and CING explanations clear
3) I found everything
4) Working out problem by yourself is helpful to your learning
5) Self-Solution of problems too time consuming and/or difficult, (finding solution yourself)
6) Learning with the CING is the same as when I learn by myself (Voit) no problem
7) Can’t say as I never used it with a teacher, but might be easier with a teacher

4/3b) Welche Lernaktivitäten helfen Dir normalerweise (ohne CING) bei der Lösung einer solchen Aufgabe?**

**(Self-)Learning Strategies (without CING) for task realisation**

**QuestionDocu:** Successful Self-Learning with the CING is more likely to happen if learners’ strategies without the CING support self-learning and independent problem solution. Traditional strategies that are dependent on teacher advice, books indexes etc. the CING cannot support, CING experience can be expected to be worse.

**Answer Categories:** (add class/own material or with/without mistake check)

1) Rule and Signalword revision/memorisation in general
2) Rule revision of learner’s problem areas (with partic. learning material )
3) Exercise practice in general
4) Exercise practice in learner’s problem areas
5) Revision with Use CourseBook/ Lesson Notes
6) Exercise practice with mistake check and rule revision
7) Lesson memorisation, no preparation
Create own examples of learned structures
Learner Opinion on Learning:
1) Only practice helps learning
2) Only rule application in a test helps learning
3) Visual graphs of grammar help to understand the structures

4/6b) Welche Art von Material war für dich am hilfreichsten? Warum?
**Assessment of material type relevance for task fulfilment and learner’s learning strategy**

QuestionDocu: Adequate Specification of information requires the learner to assess material forms for his own learning experience. The more his assessment coincides with his learning strategy (e.g. preference for contextual learning with example and *Discovery* pages as preferred learning material) the better he can be expected to use the CING for his learning goal.

Answer categories:
1) CING Material type assessment relevance for Learning Strategy
   a) strongly connected
   b) connected
   c) weakly connected
2) Material choice should be according to learning preferences (Voit)

4/5c) Woran erkennst du, dass diese Seite (erste an navigierte Seite) relevant für deine Testvorbereitung ist?
**Self-Assessment of selected information**

QuestionDocu: Adequate Specification of Information includes the ability to apply assessment of relevance-strategies of found information to the given task (required knowledge acquisition)

A failure of information assessment strategies will doubtless lead to inefficient/irrelevant CING page use.

Answer Categories:
1) Title: Keyword
2) Content: Keyword
3) Content Structure/ Design
4) Place of the page in the hierarchy (first place=introductory page)
5) Material and type helpful to my learning strategy

4/7) Was hast du dann auf den ausgewählten Seiten getan für deine Testvorbereitung?
**Learning Strategy (on CING pages)**

QuestionDocu: Efficient self-guided learning strategies require the learner to use learning material as relevant as possible to his learning goal and learning preferences. Learners with a strong inclination to following CING-given hierarchy/sequence of material/pages can be expected to show fewer self-learning strategies and might thus use less relevant material for their task fulfilment than those with strategies aligned with their learn.strategies/gaps.

Answer Categories:
Learning Strategies
7) Rule memorisation
8) Exercise to practice rules
9) Examples compare to rules
10) Correct exercises with feedback option
11) Learning activity according to needs (also material (type) selection)

CING research session kept them from following usual learning strategies (too little time)
<table>
<thead>
<tr>
<th>4/10c) Konntest du diese Probleme (die du während der CING Arbeit erfahren hast) lösen?</th>
<th><strong>Self-Learning Strategies: Problem Solution</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QuestionDocu:</strong> Efficient self-guided learning requires the ability to assess learning performance and solve problems that obstructed an ideal learning experience. Learners with the ability to solve the problems are more likely to use the CING as what it is intended: a useful/efficient self-learning tool, than those who prefer to have support in problem situations.</td>
<td></td>
</tr>
</tbody>
</table>

**Answer Categories:**

3) Y

4) N

**Explanation:**

a) Failed to read instructions properly
b) Problem Solution works, after some trial period
c) Use/read material more carefully
d) Translation of vocab with the help of the sentence context
e) Read rules and grammar became clearer then, but still difficult- need more time (Dankert/Fröde)

---

<table>
<thead>
<tr>
<th>4/10) Bereitete Dir die CING Probleme während deiner Aufgabenbearbeitung/ bzw. Testvorbereitung?</th>
<th><strong>CING Problems experienced while CING use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QuestionDocu:</strong> Problems experienced by more than one learner can hint at a serious disadvantage the CING presents to efficient CING use. Other, less frequent problems help to understand the learner’s false ideas about the CING that lead to problems or less serious issues that might be solved later.</td>
<td></td>
</tr>
</tbody>
</table>

**Answer Categories:**

3) Y

4) N

---

| 4/10b) (Zu 10a) Welcher Art? | **December problems:**
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QuestionDocu:</strong> s.o.</td>
<td></td>
</tr>
</tbody>
</table>

**Answer Categories:**

1) Feedback system was confusing
2) Orientation problems
3) Problems improved after using the CING for a while
4) Material comprehension (vocabulary)
5) Reading off the screen difficult
6) Navigation/ navigation tools confusing
7) Learning with CING maybe better in instructional setting (Kreu)

---

| 4/11c) Gab es Probleme beim navigieren in der CING? Welche? | **December problems:**
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QuestionDocu:</strong> s.o. particular on Navigation within the CING</td>
<td></td>
</tr>
</tbody>
</table>

**Answer Categories:**

1) Y

2) N

**December problems:**

a) Tried to click SelectButton on Intropage, but didn’t read the Intropage properly (Dau)
b) The titles were difficult for me to understand as I knew little what the terms meant
c) Backbutton and SelectButton need to be presented clearer (and on the intropage less obvious so it doesn’t invite to click it) (Vo)
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>d) Wouldn’t have expected Simple Past under Continuous Forms, but with thinking about the other headlines it works (Dunk)</td>
<td></td>
</tr>
</tbody>
</table>
| 4/12) Welche zusätzlichen Informationen in der CING hättest Du dir für die erste Arbeit (Dez05) mit der CING gewünscht, damit diese Dir leichter fiel? **Assessment of gaps in CING-use knowledge** | QuestionDocu: s.o. focus: CING usage problems/gaps that need to be added in form of support or tool inside the CING to easen usage  
**Answer Categories:**  
a) CING titles clearer and easier to understand (Hints on meaning of titles)  
b) Design the graphs clearer and less overloaded  
c) give time to experience the CING freely before using it in instruction/test situation  
d) Material easier: (Make examples language and rule language easier)  
e) Vocabulary support: Dictionary (add a dictionary)  
f) CING incorporation in lesson situation (incorporate the CING in a lesson situation)  
g) Design feedback system clearer (usage) and more elaborate feedback answers (Give better and clearer feedback on exercises and Design clear relation between feedback and exercise answers)  
i) CING is a good tool in general  
k) Question 11b: *Butter: considers Navilinks to show a different set of pages than SelectNavigation page- another source for inefficient CING behaviour* |
| 3/4) “Aus deiner Erinnerung an die Forschungssitzungen im Dezember letzten Jahres, was war für Dich das schwierigste in der Sitzung?” **CING Experience Dec2005: most difficult** | Question Docu: CING Problems at beginning of CING usage that hinder efficient CING usage  
**Answer Categories:**  
1) Nothing  
2) Doesn’t remember  
3) Language Material Problems:  
   1) Language examples: too difficult  
   2) Rule Material: Bad Presentation  
   3) Examples: Too difficult  
4) Navigation within CING  
5) Research session: Too little time  
6) Feedback System: confusing |
| 3/5) “Und was war besonders leicht für Dich?” **CING Experience – Dec2005: easiest** | Question Docu: CING Advantages: At beginning of CING usage  
**Answer Categories:**  
1) Don’t know  
2) Everything was difficult  
3) CING use  
4) CING design (colours, frames)  
5) CING structure, DUAL Approach  
6) CING variety of material  
7) CING material: explanation of basics |

*Deleted questions: 4/3c) Fully (from Questionnaire and Data Analysis)*
Appendix H1: CING experience questionnaire

Statement items

1) **Salienz der Strukturen** (Grammatikstrukturen klar dargestellt, um vom Lerner entdeckt zu werden und beim Grammatiklernen zu helfen)

1) Das CING-Grammatikmaterial (Regeln/Beispiele) zeigte mir nicht eindeutig, wie ich die Zeitformen anwenden muss oder bilde, weil diese darin nicht genug hervorgehoben wurden.
2) Mein Lernen der Bildung und Anwendung der Zeitformen wurde durch die klare Hervorhebung der Formen in den Beispielsätzen und Regeln gut unterstützt.
3) Beim Lernen der Grammatik halfen die Beispielsätze und Regelerklärungen meinem Verständnis nicht, da sie die Bildung der Grammatik nicht klar zeigten.
4) Das Lernen der Grammatik (Anwendung im Satz/Bildung) funktionierte gut, wegen der deutlichen Präsentation der Strukturen in den Regeln und Beispielsätzen der CING.
5) Wie die Grammatikstrukturen angewendet und gebildet werden, wurde in den CING Regelerklärungen und Beispielsätzen klar hervorgehoben.

2) **Grammatikregeln verständlich** (Satzstruktur/Begriffe)

9) Die Anwendung der Grammatik war gut zu verstehen, weil die Erklärungen der Regeln und die Grammatikbegriffe darin gut verständlich für mich waren.
10) Die Grammatikregelerklärungen und Grammatikbegriffe verstand ich gut, weil sie verständlich geschrieben waren.

3) **Verständlichkeit des Vokabulars** (Beispiele/Übungen)

12) Die Beispiel- und Übungssätze halfen mir die Anwendung der Grammatik zu lernen, da sie für mich einfach zu verstehen waren.
13) Die einfache und verständliche Formulierung der Sätze in den Beispielen und Übungsaufgaben half mir, die Anwendung der Zeitformen gut zu verstehen.
14) Die Beispielsätze halfen mir, die Anwendung der Regeln zu verstehen, weil sie versteherbar geschrieben waren und einfache Vokabeln enthielten.
15) Die Anwendung der Zeitformen in Sprachbeispielen zu verstehen oder Übungsaufgaben zu machen, war durch die schwierigen Vokabeln in den Beispielsätzen nicht einfach.
4) **Verständlichkeit des Feedback** (Fehlerrückmeldungen/deren Präsentation)

16) Die Fehlerrückmeldungen zu meinen Übungsaufgaben wurden klar und deutlich präsentiert.
17) Die Fehlerrückmeldungen zu meinen Übungsaufgaben waren unübersichtlich präsentiert und halfen mir nicht, meine Fehler zu korrigieren oder zu begreifen worin mein Fehler lag.
18) Durch die Fehlerrückmeldungen zu meinen bearbeiteten Übungsaufgaben, verstand ich, warum meine Antworten falsch waren.
19) Durch die Fehlerrückmeldungen konnte ich meine Fehler gut korrigieren und auch verstehen.
20) Die Fehlerrückmeldungen zu den gelösten Übungssätzen half mir nicht, meine Fehler zu verstehen oder zu korrigieren.

5) **Verständlichkeit der Thementitel**

21) Die eindeutigen Thementitel erleichterten meine Suche nach relevantem Grammatikmaterial für mein Lernen mit der CING.
22) Die Thementitel der CING zeigten mir deutlich, wo ich welches Grammatikthema finden konnte.
23) Es war schwierig die Grammatikthemen zu finden, die man suchte, weil die Thementitel unklar waren.
24) In der CING konnte ich die Materialien (Regeln, Beispielsätze, Übungen) zu den verschiedenen Grammatikthemen, leicht finden, weil die Thementitel gut verständlich waren.

6) **Selbstkontrolle in der CING**

26) Ich lerne Grammatik gut mit der CING, weil ich mir die Grammatikregeln und Sprachbeispiele öfter und länger ansehen kann.
29) Da ich die Regeln mehrmals/länger durchlesen kann und die Grammatikstrukturen in Übungen oft anwenden kann, ist die CING sehr hilfreich für mein Lernen.
30) Die CING ist nicht hilfreich für mein Grammatiklernen, weil sie mir nicht genau sagt, was ich lernen muss und wie oft ich dies üben soll.
### Appendix H2: CING experience questionnaire grid (June 2005)

<table>
<thead>
<tr>
<th>Aussagen</th>
<th>Perfekt</th>
<th>Probleme beim Wählen der Themengebiete / Gründe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>3, ok</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1, ok</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6, ok</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>1 Grammatikstruktur scheint wie „Salienz der Struktur“</td>
</tr>
<tr>
<td>6</td>
<td>7, ok</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>1 „GrammatikStruktur“ wie „Salienz der Struktur“, 2 verständlich + Grammarstruktur</td>
</tr>
<tr>
<td>8</td>
<td>4, ok</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>6, ok</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>4, ok</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>7, ok</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>6 Navigation verguckt</td>
</tr>
<tr>
<td>13</td>
<td>3, ok</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>3 Grammatikbegriffe überlesen, bei Hinweis war Kateg. 2</td>
</tr>
<tr>
<td>15</td>
<td>5, ok</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>7, ok</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>2, ok</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>4, ok</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>5</td>
<td>6 interpreted Navigation: helfen Themen zu finden- ist wie Navigation</td>
</tr>
<tr>
<td>20</td>
<td>1, ok</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>7</td>
<td>6 interpretiert „Lehrer“, 1 –keine Selbstkontrolle,</td>
</tr>
<tr>
<td>22</td>
<td>6, ok</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>5, ok</td>
<td></td>
</tr>
<tr>
<td>24</td>
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<td>25</td>
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<td></td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>Grammarstruktur gram. regeln</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aussagen</th>
<th>Perfekt</th>
<th>Aussagen gewählt/ Gründe</th>
</tr>
</thead>
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<tr>
<td>27</td>
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</tr>
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<td>29</td>
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<td>30</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>35</td>
<td>5, ok</td>
<td></td>
</tr>
</tbody>
</table>
Appendix I: Final learner experience questionnaire

Um die Chemnitz InternetGrammar (CING) verbessern zu können, ist uns ihre Meinung wichtig. Mit Hilfe der Bewertung der folgenden Aussagen können Sie ihre Erfahrungen mit der CING erklären. Bewerten Sie alle Aussagen bevor Sie weitergehen und bitte lesen Sie die Aussagen gründlich und antworten Sie ehrlich.

Topic areas of the items:

1 Salienz der Strukturen
2 Metasprache
3 Vokabular
4 Feedback
5 Verständliche Thementitel
6 Autonomes, selbstgeleitetes Lernen

Answer categories: Stimme voll zu 1 2 3 4 5 stimme gar nicht zu

1) ☐ Das CING-Grammatikmaterial (Regeln/Beispiele) zeigte mir nicht eindeutig, wie ich die Zeitformen anwenden muss oder bilde, weil diese darin nicht genug hervorgehoben wurden. (Themengebiet 1)

2) ☐ Die schwierigen Vokabeln der Beispiel- und Übungssätze halfen mir nicht, die Anwendung des Simple Past und/oder Present Perfect besser zu verstehen. (Themengebiet 3)

3) ☐ Die Beispiel- und Übungssätze halfen mir, die Anwendung der Grammatik zu lernen, da die Sätze für mich einfach zu verstehen waren. (Themengebiet 3)

4) ☐ Ich lerne Grammatik gut mit der CING, weil ich mir die Grammatikregeln und Sprachbeispiele öfter und länger ansehen kann. (Themengebiet 6)

5) ☐ Die Fehlerrückmeldungen zu meinen Übungsaufgaben waren klar und deutlich präsentiert. (Themengebiet 4)

6) ☐ Die eindeutigen Thementitel erleichterten meine Suche nach relevantem Grammatikmaterial in der CING. (Themengebiet 5)

7) ☐ Durch die mir unverständlichen Grammatikbegriffe in den Regelerklärungen hatte ich Probleme, die Anwendung der Grammatikstrukturen zu begreifen. (Themengebiet 2)
8)  □  Die CING ist nicht sehr hilfreich für mein Grammatiklernen, da ich selber entscheiden muss, welches Material ich lese und wie viele Übungen ich mache. (Themengebiet 6)

9)  □  Die Erklärungen der Grammatikregeln und die Grammatikbegriffe waren nicht kompliziert formuliert und halfen meinem Verständnis der englischen Grammatik. (Themengebiet 2)

10)  □  Mein Lernen der Bildung und Anwendung der Zeitformen wurde durch die klare Hervorhebung der Formen in den Beispielsätzen und Regeln gut unterstützt. (Themengebiet 1)

11)  □  Die Anwendung der Grammatik war gut zu verstehen, weil die Erklärungen der Regeln und die Grammatikbegriffe darin gut verständlich für mich waren. (Themengebiet 2)


13)  □  Die einfache und verständliche Formulierung der Sätze in den Beispielen und Übungsaufgaben half mir, die Anwendung der Zeitformen gut zu verstehen. (Themengebiet 3)

14)  □  Die Grammatikregeln halfen mir nicht beim Lernen der Grammatik, da ich viele Grammatikbegriffe der Regeln nicht verstand. (Themengebiet 2)

15)  □  Die Thementitel der CING zeigten mir deutlich, wo ich welches Grammatikthema finden konnte. (Themengebiet 5)

16)  □  Durch die Fehlerrückmeldungen zu meinen bearbeiteten Übungsaufgaben verstand ich, warum meine Antworten falsch waren. (Themengebiet 4)

17)  □  Beim Lernen der Grammatik halfen die Beispielsätze und Regelerklärungen meinem Verständnis nicht, da sie die Bildung der Grammatik nicht klar zeigten. (Themengebiet 1)

18)  □  Es war schwierig, die Seiten zum Simple Past und/oder Present Perfect zu finden, die man suchte, weil die Thementitel unklar waren. (Themengebiet 5)

19)  □  Durch die unübersichtliche Präsentation der Fehlerrückmeldungen zu den Übungsaufgaben, halfen mir die Rückmeldungen nicht bei der Korrektur meiner Fehler. (Themengebiet 4)
20) Durch die Fehlerrückmeldungen konnte ich meine Fehler gut korrigieren und verstehen. (Themengebiet 4)

21) Die Beispielsätze, sowie die Übungssätze halfen mir, die Anwendung der Regeln zu verstehen, weil sie verständlich geschrieben waren und einfache Vokabeln enthielten. (Themengebiet 3)

22) Da ich die Regeln mehrmals durchlesen kann und das Simple Past und/oder Present Perfect in Übungen oft anwenden kann, ist die CING sehr hilfreich für mein Lernen. (Themengebiet 6)

23) Das Lernen der Grammatik (Anwendung im Satz/Bildung) funktionierte gut, wegen der deutlichen Präsentation der Strukturen in den Regeln und Beispielsätzen der CING. (Themengebiet 1)

24) Die Grammatikregelerklärungen und Grammatikbegriffe verstand ich gut, weil sie unkompliziert geschrieben waren. (Themengebiet 2)

25) In der CING konnte ich die Materialien (Regeln, Beispielsätze, Übungen) zum Simple Past und/oder Present Perfect leicht finden, weil die Thementitel gut verständlich waren. (Themengebiet 5)

26) Wie das Simple Past und Present Perfect angewendet und gebildet werden, wurde in den CING Regelerklärungen und Beispielsätzen klar hervorgehoben. (Themengebiet 1)

27) Grammatiklernen mit der CING fällt mir nicht leicht, weil das Programm mir nicht genau sagt, was ich lernen muss und wie oft ich dies üben soll. (Themengebiet 6)

28) Die CING Thementitel waren für mich unverständlich, und zeigten mir nicht, wo in der CING ich welches Grammatikmaterial finden konnte. (Themengebiet 5)

29) Die Anwendung der Zeitformen in Sprachbeispielen zu verstehen oder Übungsaufgaben zu machen, war durch die schwierigen Vokabeln in den Sätzen (Beispiel- und/oder Übungssätze) nicht einfach. (Themengebiet 3)

30) Die Fehlerrückmeldungen zu den gelösten Übungssätzen halfen mir nicht, meine Fehler zu verstehen oder zu korrigieren. (Themengebiet 4)
Appendix J: CING experience questionnaire results: Cronbach-calculation

Categories (June 2005)

- Salience of structure
- Metalanguage
- Vocabulary
- Feedback
- Topictitles
- Autonomy

1) Salienz der Struktur:

**Alpha: 0.8472**  
Standardised Item Alpha: **0.8523**

None of the questionnaire items increases the \( \alpha \)-value when deleted.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std Dev</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1786</td>
<td>0.9449</td>
<td>28.0</td>
</tr>
<tr>
<td>2.3214</td>
<td>0.8630</td>
<td>28.0</td>
</tr>
<tr>
<td>2.1786</td>
<td>0.9449</td>
<td>28.0</td>
</tr>
<tr>
<td>2.2143</td>
<td>1.1974</td>
<td>28.0</td>
</tr>
<tr>
<td>2.1071</td>
<td>1.1655</td>
<td>28.0</td>
</tr>
</tbody>
</table>

Anhand der Mittelwerte (Mean) ist zu sehen, dass die Mehrheit der Lerner in der Likert-skala den Wert 2 (stimme zu) wählten. Das lässt darauf schließen, dass die Strukturen der CING klar dargestellt und somit für die Lerner salient genug sind (um entdeckt und gelernt zu werden).

2) Metasprache:

**Alpha: 0.7094**  
Standardised Item Alpha: **0.7080**

Item 7 (Frage 7: *Durch die schwierigen Begriffe zu Grammatik in den Regeln, hatte ich Probleme die Regeln zu begreifen.*) würde den Alphawert um 0.02 erhöhen.

Table excerpt from Item-total Statistics

<table>
<thead>
<tr>
<th>Aussagen Items</th>
<th>Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>A6</td>
<td>0.6228</td>
</tr>
<tr>
<td>A7</td>
<td>0.7235</td>
</tr>
<tr>
<td>A8</td>
<td>0.6202</td>
</tr>
<tr>
<td>A9</td>
<td>0.6696</td>
</tr>
<tr>
<td>A10</td>
<td>0.6520</td>
</tr>
</tbody>
</table>
Anhand der Mittelwerte ist zu sehen, dass die Mehrheit der Lerner den Aussagen zustimmten. Daraus kann man schließen, dass die Metasprache für die meisten Lerner verständlich war und damit das Lernen der Grammatik unterstützen kann.

3) Vokabular:

**Alpha = ,7902 Standardized item alpha = ,8079**


<table>
<thead>
<tr>
<th>Aussagen</th>
<th>Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>A11</td>
<td>.6825</td>
</tr>
<tr>
<td>A12UC</td>
<td>.7431</td>
</tr>
<tr>
<td>A13UC</td>
<td><strong>.8104</strong></td>
</tr>
<tr>
<td>A14</td>
<td>.7955</td>
</tr>
<tr>
<td>A15</td>
<td>.7158</td>
</tr>
</tbody>
</table>

**Vokabel-Mean:**

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std Dev</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A11</td>
<td>2,1786</td>
<td>.8630</td>
</tr>
<tr>
<td>2. A12</td>
<td>1,9643</td>
<td>.9222</td>
</tr>
<tr>
<td>3. A13</td>
<td>2,1786</td>
<td>1,0560</td>
</tr>
<tr>
<td>4. A14</td>
<td>2,2143</td>
<td>1,1339</td>
</tr>
<tr>
<td>5. A15</td>
<td>2,0357</td>
<td>.8381</td>
</tr>
</tbody>
</table>

Anhand der Mittelwerte ist zu sehen, dass die Mehrheit der Lerner den Aussagen zustimmten. Daraus lässt sich schließen, dass die in der CING verwendeten Vokabeln nicht zu schwierig für die Teilnehmer waren und die Wortwahl der Beispiel und Übungssätze verständlich für die Teilnehmer war.

4) Feedback:

**Alpha = ,8169 Standardized item alpha = ,8219**


Table excerpt from Item-Total Statistics
Anhand der Mittelwerte ist zu sehen, dass die Mehrheit der Lerner den Aussagen zustimmten, aber Tendenz zu einer „mittel“ Aussage zeigten. Dies kann bedeuten, dass Lerner keine Übungen gemacht, das Feedback nicht verwendet haben oder das Feedback nicht sehr hilfreich für die Übungsaufgabenlösung fanden.

5) Topictitles:

\textbf{Alpha} = 0,8705 \hspace{1cm} \textbf{Standardized item alpha} = 0,8713

Kein Item produziert bei Weglassen bessere Cronbach-Alpha Werte.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std Dev</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A21</td>
<td>2,5357</td>
</tr>
<tr>
<td>2.</td>
<td>A22</td>
<td>2,4286</td>
</tr>
<tr>
<td>3.</td>
<td>A23</td>
<td>2,4643</td>
</tr>
<tr>
<td>4.</td>
<td>A24</td>
<td>2,2143</td>
</tr>
<tr>
<td>5.</td>
<td>A25</td>
<td>2,0714</td>
</tr>
</tbody>
</table>

Anhand der Mittelwerte ist zu sehen, dass die Mehrheit der Lerner den Aussagen zustimmten, aber leichte Tendenz zu einer „mittel“-Aussage zeigen. Dies kann bedeuten, dass die Lerner die Thementitel nicht immer hilfreich fanden.

6) Autonomie:

\textbf{Alpha} = 0,8166 \hspace{1cm} \textbf{Standardized item alpha} = 0,8284

Kein Item produziert bei Weglassen einen besseren Cronbach-Alpha Wert.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Std Dev</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A26</td>
<td>2,0357</td>
</tr>
<tr>
<td>2.</td>
<td>A27</td>
<td>2,0357</td>
</tr>
<tr>
<td>3.</td>
<td>A28</td>
<td>2,1429</td>
</tr>
<tr>
<td>4.</td>
<td>A29</td>
<td>2,1786</td>
</tr>
<tr>
<td>5.</td>
<td>A30</td>
<td>2,4286</td>
</tr>
</tbody>
</table>

Anhand der Mittelwerte ist zu sehen, dass die Mehrheit der Lerner den Aussagen zustimmten. Eine merkliche Tendenz zu einer „mittel“-Aussage ist nicht zu erkennen. Die Tendenz in Item A30 kann aus der sehr engen Bedeutung der Aussage resultieren- und kann darauf hinweisen, dass Lerner eine totale Kontrolle ihres Lernens weniger wünschen.
Appendix K: Correlation of CING experience/navigation results

<table>
<thead>
<tr>
<th>Time spent on intrapage</th>
<th>Corr. Coeff.</th>
<th>Sign. (2-sided)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
<td>-.074</td>
<td>.123</td>
<td>.176</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>.631</td>
<td>.420</td>
<td>.365</td>
</tr>
<tr>
<td>Feedback</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>Metalinguistic</td>
<td>.420**</td>
<td>.404**</td>
<td>.161</td>
</tr>
<tr>
<td>Total time relevant</td>
<td>.031</td>
<td>.370*</td>
<td>.147</td>
</tr>
<tr>
<td>pages visited</td>
<td>.038</td>
<td>.011</td>
<td>.355</td>
</tr>
<tr>
<td>N</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>Number of relevant</td>
<td>.020</td>
<td>.402</td>
<td>.166</td>
</tr>
<tr>
<td>pages visited</td>
<td>.544</td>
<td>.038</td>
<td>.276</td>
</tr>
<tr>
<td>N</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>Total time relevant</td>
<td>-.166</td>
<td>-.355**</td>
<td>-.165</td>
</tr>
<tr>
<td>pages visited</td>
<td>.400</td>
<td>.017</td>
<td>.270</td>
</tr>
<tr>
<td>N</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>Total time navigation</td>
<td>.132</td>
<td>.330**</td>
<td>.131</td>
</tr>
<tr>
<td>N</td>
<td>.45</td>
<td>.45</td>
<td>.45</td>
</tr>
</tbody>
</table>

**Die Korrelation ist auf dem Niveau von 0,01 (2-seitig) signifikant. *Die Korrelation ist auf dem Niveau von 0,05 (2-seitig) signifikant.
Appendix L: Descriptive statistics on CING navigation (Dec 2005)

Navigation results

**Table 1a: Number of learners and their Time Spent on Intropage**

<table>
<thead>
<tr>
<th>Seconds</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>27</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>33</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>40</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>48</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>56</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>58</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>60</td>
<td>2</td>
<td>4.4</td>
</tr>
<tr>
<td>61</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>69</td>
<td>2</td>
<td>4.4</td>
</tr>
<tr>
<td>70</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>72</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>85</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>92</td>
<td>3</td>
<td>6.7</td>
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<tr>
<td>96</td>
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<td>2.2</td>
</tr>
<tr>
<td>110</td>
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<td>2.2</td>
</tr>
<tr>
<td>116</td>
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<td>2.2</td>
</tr>
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<td>133</td>
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<td>2.2</td>
</tr>
<tr>
<td>139</td>
<td>1</td>
<td>2.2</td>
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<td>2.2</td>
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<tr>
<td>147</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>158</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>169</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>185</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>186</td>
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<td>2.2</td>
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<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>257</td>
<td>2</td>
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<td>2.2</td>
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<td>334</td>
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<td>2.2</td>
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<td>2.2</td>
</tr>
<tr>
<td>366</td>
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</tr>
<tr>
<td>388</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>435</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>469</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>483</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>484</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>45</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Table 1b: Overall Time Spent on Intropage

<table>
<thead>
<tr>
<th>Nr. of participants</th>
<th>Time spent on intropage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nr. of lost logfiles</td>
<td>45</td>
</tr>
<tr>
<td>Mean</td>
<td>167.62</td>
</tr>
<tr>
<td>Standard Deviation (SD)</td>
<td>137.925</td>
</tr>
<tr>
<td>Minimum</td>
<td>4</td>
</tr>
<tr>
<td>Maximum</td>
<td>404</td>
</tr>
</tbody>
</table>

Table 2: Number of Relevant Pages (visited)

<table>
<thead>
<tr>
<th>Nr of pages</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>4.4</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4.4</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>11.1</td>
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<tr>
<td>4</td>
<td>6</td>
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<td>5</td>
<td>5</td>
<td>11.1</td>
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<td>6</td>
<td>1</td>
<td>2.2</td>
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<td>7</td>
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</tr>
<tr>
<td>8</td>
<td>4</td>
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<td>10</td>
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<tr>
<td>13</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3: Time Spent on Relevant Pages

<table>
<thead>
<tr>
<th>N</th>
<th>Mean'</th>
<th>Standard Deviation'</th>
<th>Minimum'</th>
<th>Maximum'</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>1620.51'</td>
<td>670.899'</td>
<td>0</td>
<td>2266'</td>
</tr>
</tbody>
</table>
### Table 4: Correlation between Number of Relevant Pages (visited) and Time Spent on Relevant Pages

<table>
<thead>
<tr>
<th>Total time spent on relevant pages</th>
<th>Pearson Correl Sign. (2-sided)</th>
<th>Number of relevant pages visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>.558*</td>
<td>45</td>
</tr>
</tbody>
</table>

* Die Korrelation ist auf dem Niveau von 0.01 (2-seitig) signifikant.

### Table 5: Number of Irrelevant Pages Visited

<table>
<thead>
<tr>
<th>Nr. of pages</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>15</td>
<td>33.3</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>11.1</td>
</tr>
<tr>
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<td>7</td>
<td>15.6</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>4.4</td>
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<tr>
<td>7</td>
<td>2</td>
<td>4.4</td>
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<tr>
<td>10</td>
<td>2</td>
<td>4.4</td>
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<tr>
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<td>2.2</td>
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<td>2</td>
<td>4.4</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
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</tbody>
</table>

### Table 6: Time Spent on Irrelevant Pages

<table>
<thead>
<tr>
<th></th>
<th>Total time spent on irrelevant pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>45</td>
</tr>
<tr>
<td>Mean</td>
<td>399.51</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>589.040</td>
</tr>
<tr>
<td>Minimum</td>
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</tr>
<tr>
<td>Maximum</td>
<td>1985</td>
</tr>
</tbody>
</table>

### Table 7: Correlation between Time Spent on Irrelevant Pages and Number of Relevant Pages (visited)

<table>
<thead>
<tr>
<th>Number of irrelevant pages visited</th>
<th>Total time spent on irrelevant pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>.616*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total time spent on irrelevant pages</th>
<th>Pearson Correl Sign. (2-sided)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.000</td>
<td>45</td>
</tr>
</tbody>
</table>

* Die Korrelation ist auf dem Niveau von 0.01 (2-seitig) signifikant.
Table 8: Time Spent on Navigation

<table>
<thead>
<tr>
<th>Seconds</th>
<th>Frequency</th>
<th>%</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>41</td>
<td>1</td>
<td>2.2</td>
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<td>42</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>49</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>50</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>53</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>60</td>
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<td>2.2</td>
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<td>64</td>
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<tr>
<td>72</td>
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<td>2.2</td>
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<tr>
<td>81</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>82</td>
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<td>2.2</td>
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<tr>
<td>83</td>
<td>1</td>
<td>2.2</td>
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<td>88</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>89</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>90</td>
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<td>2.2</td>
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<tr>
<td>98</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>109</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>116</td>
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</tr>
<tr>
<td>118</td>
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<td>4.4</td>
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<tr>
<td>137</td>
<td>1</td>
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</tr>
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<td>142</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>143</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>148</td>
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<td>2.2</td>
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<tr>
<td>151</td>
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<td>2.2</td>
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<tr>
<td>156</td>
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<td>2.2</td>
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<tr>
<td>157</td>
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<td>2.2</td>
</tr>
<tr>
<td>159</td>
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<td>2.2</td>
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<tr>
<td>163</td>
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<td>2.2</td>
</tr>
<tr>
<td>164</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>169</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>188</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>193</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>224</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>236</td>
<td>1</td>
<td>2.2</td>
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<tr>
<td>281</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>297</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>318</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
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<td>2.2</td>
</tr>
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<td>588</td>
<td>1</td>
<td>2.2</td>
</tr>
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<td>690</td>
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<td>2.2</td>
</tr>
<tr>
<td>788</td>
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<td>2.2</td>
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<td>1554</td>
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<td>2.2</td>
</tr>
<tr>
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</tbody>
</table>
Table 9:
**Simple Past (162)**

<table>
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<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>not visited</td>
<td>23</td>
<td>52,3</td>
</tr>
<tr>
<td>visited</td>
<td>21</td>
<td>47,7</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Table 10:
**Talking about the Past (181)**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>not visited</td>
<td>27</td>
<td>61,4</td>
</tr>
<tr>
<td>visited</td>
<td>17</td>
<td>38,6</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Table 11:
**Speech Time and Reference Time (182)**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>not visited</td>
<td>34</td>
<td>77,3</td>
</tr>
<tr>
<td>visited</td>
<td>10</td>
<td>22,7</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
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</tr>
</tbody>
</table>

Table 12:
**Use of Perfect (183)**

<table>
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<tr>
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<th>Frequency</th>
<th>%</th>
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</thead>
<tbody>
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<td>10</td>
<td>22,7</td>
</tr>
<tr>
<td>visited</td>
<td>34</td>
<td>77,3</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Table 13:
**Present Perfect 1 (184)**

<table>
<thead>
<tr>
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<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>not visited</td>
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<tr>
<td>visited</td>
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<td>72,7</td>
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Table 14:
**Present Perfect 2 (185)**

<table>
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<th>Frequency</th>
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</thead>
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<tr>
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<td>63,6</td>
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</tbody>
</table>

Table 15:
**Present Perfect 3 (186)**

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>visited</td>
<td>22</td>
<td>50,0</td>
</tr>
<tr>
<td>Total</td>
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<td>100,0</td>
</tr>
</tbody>
</table>

Table 16:
**For and Present Perfect (187)**

<table>
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<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
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<td>26</td>
<td>59,1</td>
</tr>
<tr>
<td>visited</td>
<td>18</td>
<td>40,9</td>
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<tr>
<td>Total</td>
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</tr>
</tbody>
</table>

Table 17:
**For and Other Tenses (188)**

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<th>Frequency</th>
<th>%</th>
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</thead>
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<td>84,1</td>
</tr>
<tr>
<td>visited</td>
<td>7</td>
<td>15,9</td>
</tr>
<tr>
<td>Total</td>
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</tr>
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Table 18:
**Since and Present Perfect (189)**

<table>
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<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>27</td>
<td>61,4</td>
</tr>
<tr>
<td>visited</td>
<td>17</td>
<td>38,6</td>
</tr>
<tr>
<td>Total</td>
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</table>

Table 19ff on the continuing page.
Topic pages visited continued:

**Table 19:**

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<th>%</th>
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</thead>
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<tr>
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<td>31</td>
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</tr>
<tr>
<td>visited</td>
<td>13</td>
<td>29,5</td>
</tr>
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</tbody>
</table>

**Table 20:**

<table>
<thead>
<tr>
<th>Perfect Yes or No (191)</th>
<th>Frequency</th>
<th>%</th>
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</thead>
<tbody>
<tr>
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<td>24</td>
<td>54,5</td>
</tr>
<tr>
<td>visited</td>
<td>20</td>
<td>45,5</td>
</tr>
<tr>
<td>Total</td>
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<td>100,0</td>
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</tbody>
</table>

**Table 21:**

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<th>Do not use the Perfect (192)</th>
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</thead>
<tbody>
<tr>
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<td>24</td>
<td>54,5</td>
</tr>
<tr>
<td>visited</td>
<td>20</td>
<td>45,5</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100,0</td>
</tr>
</tbody>
</table>

**Table 22:**

<table>
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<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
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<td>65,9</td>
</tr>
<tr>
<td>visited</td>
<td>15</td>
<td>34,1</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>100,0</td>
</tr>
</tbody>
</table>
Appendix M: Correlations of learner profile, CING experience/navigation

Correlation of the results for the categories: learner profile, CING experience/navigation

Table 1: Learner knowledge of CING-Titles vs all Demographic Questionnaire variables

<table>
<thead>
<tr>
<th>Knowledge of CING-Titles</th>
<th>Type of English curriculum</th>
<th>Length of English instruction at school</th>
<th>Type of language exchange</th>
<th>Eng. Language exam results (Placement Tests)</th>
<th>LI Experience</th>
<th>Like Work with Computers</th>
<th>Metropolitan Area</th>
<th>Metropolitan Experience</th>
<th>Metropolitan Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: School Leaving English, Length of English Instruction, Type of Engl. Language Exchange with all CING-Experience variables.

<table>
<thead>
<tr>
<th>Bursary English</th>
<th>Pearson Corr.</th>
<th>Sign (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
<td>-.006</td>
<td>.051</td>
<td>143</td>
</tr>
<tr>
<td>Vocab</td>
<td>.986</td>
<td>.710</td>
<td>257</td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metalanguage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titles</td>
<td>.022</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>.205</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: English Language Exam Result, Language Learning (LL) Experience, Like Work with Computers with all CING-Experience variables.

<table>
<thead>
<tr>
<th>English Language exam results</th>
<th>Pearson Corr.</th>
<th>Sign (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
<td>-.023</td>
<td>.134</td>
<td>243</td>
</tr>
<tr>
<td>Vocab</td>
<td>.170</td>
<td>.331</td>
<td>173</td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metalanguage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titles</td>
<td>.232</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>.023</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LL Experience</th>
<th>Pearson Corr.</th>
<th>Sign (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance</td>
<td>-.055</td>
<td>.013</td>
<td>55</td>
</tr>
<tr>
<td>Vocab</td>
<td>.688</td>
<td>.022</td>
<td>55</td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metalanguage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titles</td>
<td>-.050</td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Autonomy</td>
<td>.005</td>
<td></td>
<td>55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Like Work with Computers</th>
<th>Pearson Corr.</th>
<th>Sign (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.111</td>
<td>.212</td>
<td>55</td>
</tr>
<tr>
<td>Vocab</td>
<td>.259</td>
<td>.013</td>
<td>55</td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metalanguage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titles</td>
<td>.165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>.163</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0.05 (2-seitig) signifikant. **Die Korrelation ist auf dem Niveau von 0.01 (2-seitig) signifikant.
Table 4: All NetUsage variables, Extrinsic and Intrinsic Motivation with all CING-Experience variables

<table>
<thead>
<tr>
<th></th>
<th>Balance</th>
<th>Vocab</th>
<th>Feedback</th>
<th>Metalinguage</th>
<th>Titles</th>
<th>Autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail use, emails,</td>
<td>-0.08</td>
<td>0.08</td>
<td>-0.08</td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.264</td>
</tr>
<tr>
<td>Accrds, Weblaws</td>
<td>0.43</td>
<td>0.16</td>
<td>0.26</td>
<td>0.13</td>
<td>0.10</td>
<td>0.61</td>
</tr>
<tr>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>NetUsage Web Based</td>
<td>0.07</td>
<td>0.04</td>
<td>0.12</td>
<td>0.04</td>
<td>0.139</td>
<td>-0.077</td>
</tr>
<tr>
<td>with the net</td>
<td>0.18</td>
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<td>0.22</td>
<td>0.323</td>
<td>0.62</td>
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<tr>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>NetUsage Email, online Shopping</td>
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<td>-0.165</td>
<td>-0.171</td>
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<tr>
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<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>NetUsage Last Minute, Events</td>
<td>0.12</td>
<td>0.08</td>
<td>0.08</td>
<td>-0.08</td>
<td>0.264</td>
<td>-0.088</td>
</tr>
<tr>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>NetUsage Scientific Search</td>
<td>-0.033</td>
<td>-0.071</td>
<td>-0.068</td>
<td>-0.166</td>
<td>-0.042</td>
<td>0.043</td>
</tr>
<tr>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Extrinsic Motivation</td>
<td>0.089</td>
<td>0.011</td>
<td>0.011</td>
<td>0.031</td>
<td>0.039</td>
<td>0.175</td>
</tr>
<tr>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Intrinsc Motivation</td>
<td>0.160</td>
<td>0.005</td>
<td>0.122</td>
<td>0.044</td>
<td>0.099</td>
<td>-1.142</td>
</tr>
<tr>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0.05 (2-seitig) signifikant. **Die Korrelation ist auf dem Niveau von 0.01 (2-seitig) signifikant.

Table 5: CING Title Knowledge (demographic) with all CING-Experience variables

<table>
<thead>
<tr>
<th></th>
<th>Balance</th>
<th>Vocab</th>
<th>Feedback</th>
<th>Metalinguage</th>
<th>Titles</th>
<th>Autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of CING Titles</td>
<td>-0.024</td>
<td>-0.214</td>
<td>0.038</td>
<td>0.083</td>
<td>0.15</td>
<td>0.137</td>
</tr>
<tr>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0.05 (2-seitig) signifikant. **Die Korrelation ist auf dem Niveau von 0.01 (2-seitig) signifikant.

Table 6 and 7 on the continuing page.
Table 6: Bursary English, Length of English Instruction, Type of Engl. Language Exchange with all CING-Navigation variables.

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correl</th>
<th>Number of relevant pages visited</th>
<th>Total Time Relevant Pages</th>
<th>Number of Inelevant Pages visited</th>
<th>Total Time Inelevant Pages</th>
<th>Total Time Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bursary English</td>
<td>0.554</td>
<td>0.394</td>
<td>0.266</td>
<td>0.223</td>
<td>0.236</td>
<td>0.188</td>
</tr>
<tr>
<td>8th (2-sided)</td>
<td>0.724</td>
<td>0.007</td>
<td>0.077</td>
<td>0.142</td>
<td>0.118</td>
<td>0.216</td>
</tr>
<tr>
<td>N</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Length of English instruction at school</td>
<td>0.252</td>
<td>-0.018</td>
<td>-0.042</td>
<td>0.097</td>
<td>-0.052</td>
<td>0.106</td>
</tr>
<tr>
<td>8th (2-sided)</td>
<td>0.955</td>
<td>0.304</td>
<td>0.782</td>
<td>0.525</td>
<td>0.685</td>
<td>0.498</td>
</tr>
<tr>
<td>N</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Type of language exchange</td>
<td>-1.154</td>
<td>1.151</td>
<td>-0.225</td>
<td>-0.049</td>
<td>-0.164</td>
<td>-0.037</td>
</tr>
<tr>
<td>8th (2-sided)</td>
<td>0.313</td>
<td>0.324</td>
<td>0.138</td>
<td>0.758</td>
<td>0.283</td>
<td>0.811</td>
</tr>
<tr>
<td>N</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0,05 (2-seitig) signifikant.  **Die Korrelation ist auf dem Niveau von 0,01 (2-seitig) signifikant.

Table 7: English Language Exam Result, Like Work with Computers with all CING-Navigation variables

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correl</th>
<th>Number of relevant pages visited</th>
<th>Total Time Relevant Pages</th>
<th>Number of Inelevant Pages visited</th>
<th>Total Time Inelevant Pages</th>
<th>Total Time Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl. language exam results</td>
<td>-1.250</td>
<td>1.087</td>
<td>0.654</td>
<td>0.014</td>
<td>0.070</td>
<td>0.148</td>
</tr>
<tr>
<td>8th (2-sided)</td>
<td>0.000</td>
<td>0.569</td>
<td>0.726</td>
<td>0.927</td>
<td>0.649</td>
<td>0.330</td>
</tr>
<tr>
<td>N</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Like Work with Computers</td>
<td>0.213</td>
<td>-2.522</td>
<td>-0.072</td>
<td>0.233</td>
<td>0.057</td>
<td>-0.056</td>
</tr>
<tr>
<td>8th (2-sided)</td>
<td>0.160</td>
<td>0.894</td>
<td>0.837</td>
<td>0.882</td>
<td>0.559</td>
<td>0.535</td>
</tr>
<tr>
<td>N</td>
<td>45</td>
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<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
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</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0,05 (2-seitig) signifikant.  **Die Korrelation ist auf dem Niveau von 0,01 (2-seitig) signifikant.

Tables 8 - 10 on the continuing page.
Table 8: All NetUsage variables with all CING-Navigation variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Time Intropage</th>
<th>Number of Relevant Pages visited</th>
<th>Total Time Relevant</th>
<th>Number of Irrelevant Pages visited</th>
<th>Total Time Irrelevant Pages</th>
<th>Total Time Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Usage: eMail, cards, Weblogs</td>
<td>0.006</td>
<td>0.087</td>
<td>0.304</td>
<td>0.209</td>
<td>0.400</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>0.971</td>
<td>0.688</td>
<td>0.042</td>
<td>0.064</td>
<td>0.007</td>
<td>0.026</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Net Usage: Online Library Search, WebOpac</td>
<td>-0.069</td>
<td>0.030</td>
<td>0.060</td>
<td>0.215</td>
<td>-0.103</td>
<td>0.104</td>
</tr>
<tr>
<td></td>
<td>-0.561</td>
<td>0.645</td>
<td>0.989</td>
<td>0.150</td>
<td>0.501</td>
<td>0.277</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Net Usage: Ebay, online Shopping</td>
<td>0.057</td>
<td>0.073</td>
<td>0.074</td>
<td>-0.107</td>
<td>-0.045</td>
<td>0.262</td>
</tr>
<tr>
<td></td>
<td>0.711</td>
<td>0.632</td>
<td>0.627</td>
<td>0.489</td>
<td>0.768</td>
<td>0.060</td>
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<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Net Usage: Last Minute, Events</td>
<td>0.144</td>
<td>0.077</td>
<td>0.054</td>
<td>0.088</td>
<td>-0.180</td>
<td>0.092</td>
</tr>
<tr>
<td></td>
<td>0.527</td>
<td>0.110</td>
<td>0.723</td>
<td>0.558</td>
<td>0.557</td>
<td>0.546</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Net Usage: Scientific, Not Search</td>
<td>0.030</td>
<td>0.089</td>
<td>0.113</td>
<td>-0.046</td>
<td>-0.178</td>
<td>0.081</td>
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<td>0.662</td>
<td>0.469</td>
<td>0.768</td>
<td>0.243</td>
<td>0.695</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
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</tr>
</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0,05 (2-seitig) signifikant.  **Die Korrelation ist auf dem Niveau von 0,01 (2-seitig) signifikant.

Table 9: Extrinsic and Intrinsic Motivation with all CING-Navigation variables

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Total Time Intropage</th>
<th>Number of Relevant Pages visited</th>
<th>Total Time Relevant</th>
<th>Number of Irrelevant Pages visited</th>
<th>Total Time Irrelevant Pages</th>
<th>Total Time Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extrinsic Motivation</td>
<td>0.179</td>
<td>0.081</td>
<td>0.243</td>
<td>0.092</td>
<td>0.104</td>
<td>0.303</td>
</tr>
<tr>
<td></td>
<td>0.239</td>
<td>0.595</td>
<td>0.107</td>
<td>0.540</td>
<td>0.496</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Intrinsic Motivation</td>
<td>-0.036</td>
<td>-0.077</td>
<td>-0.244</td>
<td>0.152</td>
<td>-0.180</td>
<td>0.216</td>
</tr>
<tr>
<td></td>
<td>0.016</td>
<td>0.515</td>
<td>0.105</td>
<td>0.200</td>
<td>0.215</td>
<td>0.153</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0,05 (2-seitig) signifikant.  **Die Korrelation ist auf dem Niveau von 0,01 (2-seitig) signifikant.

Table 10: CING Title Knowledge (demographic) with all CING-Navigation variables

<table>
<thead>
<tr>
<th>Knowledge of CING-titles</th>
<th>Total Time Intropage</th>
<th>Number of Relevant Pages visited</th>
<th>Total Time Relevant</th>
<th>Number of Irrelevant Pages visited</th>
<th>Total Time Irrelevant Pages</th>
<th>Total Time Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.151</td>
<td>-0.192</td>
<td>0.058</td>
<td>-0.106</td>
<td>-0.136</td>
<td>0.058</td>
</tr>
<tr>
<td></td>
<td>0.231</td>
<td>0.207</td>
<td>0.703</td>
<td>0.490</td>
<td>0.375</td>
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<td></td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
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</tr>
</tbody>
</table>

*Die Korrelation ist auf dem Niveau von 0,05 (2-seitig) signifikant.  **Die Korrelation ist auf dem Niveau von 0,01 (2-seitig) signifikant.
## Appendix N: Analysis of navigational patterns/time spent

### Weak Learners

<table>
<thead>
<tr>
<th>Navig. Characteristics</th>
<th>110406</th>
<th>120406</th>
<th>190406</th>
<th>200406</th>
<th>210406</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevante Seiten</td>
<td>1 SP</td>
<td>8 PP</td>
<td>6 PP</td>
<td>7 PP</td>
<td>4 PP</td>
</tr>
<tr>
<td>Irrelevante Seiten</td>
<td>5 (5 muns total)</td>
<td>3 Past Cont, Backgr and Foregr Interrupt</td>
<td>0</td>
<td>3 Backgr and Foregr Interrupt Change of Mean</td>
<td>1 Backgr Foregr</td>
</tr>
<tr>
<td>Zielorientierter Start</td>
<td>Nein, direkt zu irrelevanten Seiten und verweilt dort</td>
<td>Ja, direkt zu Simple Past Seiten (nach kurzem Blick auf PP links)</td>
<td>Ja, direkt zu PP Seiten</td>
<td>Ja, direkt zu PP Seiten</td>
<td>Ja, direkt zu PP Seiten</td>
</tr>
<tr>
<td>Schwierigkeiten</td>
<td>Nutzt irreversible Seiten und verweilt sehr lange (&gt;5 min)</td>
<td>Verliert seine Orientierung in Continuous Forms</td>
<td>Keine (besucht keine SP Seiten, scheint aber nach anderen Seiten statt PP zu suchen, da er viel navigiert)</td>
<td>Nutzt irreversible Seiten und liest diese genauer (ca 60 sec)- braucht Zeit, (liest relev. Seiten mind 2 min lang) um Irrelevanz zu erkennen</td>
<td>Nutzt irreversible Seite (Backgr and Foregr)</td>
</tr>
<tr>
<td>Lösungen</td>
<td>Keine! (Realisiert nicht, dass die Seiten irrelevant sind)</td>
<td>(Keine notwendig)</td>
<td>Nutzt irrelevante Seiten (in Contin Forms) und sucht über Content Menu relevante PP Seiten</td>
<td>Nutzt irrelevante Seite (Backgr and Content Menu) (einmal Corresp Page Link, aber verlässt die Seite wieder nach 4sec)</td>
<td></td>
</tr>
<tr>
<td>Allgemeine Navigation</td>
<td>Nicht Zielorientiert, nur innerhalb der CING Hierarchie und Backbutton Navi (kontrolliert mit Überblick)</td>
<td>Zielorientiert nur innerhalb der CING Hierarchie und Backbutton Navi</td>
<td>Zielorientiert und zusteifiziert durch die Nutzung von Navilinks im Frame (Findet nur der CING Hierarchie)</td>
<td>Nutzt versc. Naviformen (Backbutton, Content Menu und Navilinks im Frame) effektiv</td>
<td>Zielorientiert Nur Backbutton und Content Menu (eine Navigation nur kurzfristig (32sec) und realisiert Irrelevanz, verlässt die Seite)</td>
</tr>
</tbody>
</table>

### Strong Learners

<table>
<thead>
<tr>
<th>Navig. Characteristics</th>
<th>170206</th>
<th>260406</th>
<th>270406</th>
<th>080506</th>
<th>150506</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant Pages</td>
<td>2 PP</td>
<td>8 PP</td>
<td>5 PP</td>
<td>9 PP</td>
<td>9 PP</td>
</tr>
<tr>
<td>Irrelevante Pages</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Goal directed start</td>
<td>Ja, direkt zu PP Seiten</td>
<td>Ja, direkt zu PP Seiten</td>
<td>Ja, direkt zu PP Seiten</td>
<td>Ja, direkt zu PP Seiten</td>
<td>Ja, direkt zu PP Seiten</td>
</tr>
<tr>
<td>Difficulties</td>
<td>Versteht Feedback System nicht, braucht sehr lang für Übungen</td>
<td>Versteht Feedback system nicht, verlässt Exercise unbeendet</td>
<td>Desorientierung in Perfect Forms (Discovery) findet nicht heraus</td>
<td>Keine (Keine SP gelesen)</td>
<td></td>
</tr>
<tr>
<td>Solutions</td>
<td>Nicht Interviewer, dann schneller in Übungen</td>
<td>Nutzt Content Menu</td>
<td>Keine, fragt nicht</td>
<td>Nutzt Content Menu und findet neue Seiten</td>
<td>(Keine notwendig)</td>
</tr>
<tr>
<td>Overall Navigation</td>
<td>Zielorientiert, innerhalb der CING, geleitet</td>
<td>Zielorientiert, navigiert zuerst CING geleitet, später ausserhalb CING Struktur</td>
<td>Zielorientiert, nur innerhalb der CING Struktur (Backbutton)</td>
<td>Zielorientiert, nur innerhalb der CING Struktur (Backbutton)</td>
<td>Zielorientiert, nur innerhalb der CING Struktur (Backbutton)</td>
</tr>
</tbody>
</table>
Appendix O: Grammar rules presented in the CING

Overview of the CING grammar content on the Simple Past and Present Perfect

Simple Past vs Present Perfect

- **Simple Past:**
  Sequence of events, completedness:
  When the car was out of sight she shut the door and went back into the warmth of the lounge. FAB 3826

  Action happened at the time in the past you are referring to:
  'This summer I decided to stay at home and present a jazz/big band summer course, similar to the programme at Appel Farm, having seen the progress made by the pupils in America.' K2R 450

  Narrative use of the Simple Past
  Outside, the cicadas buzzed metallically, the sea was dark blue and only the steady hum of the air-conditioning broke the silence. JYD 1315

- **Use of the Perfect**
  Perfect forms tell us to look back across the time-gap, from one time to an earlier one.

  General information about past events, actions or occurrences. It isn't important to you to say when it happened, but you want to make clear that it did happen, and that it's relevant in some way to the situation now.

  What you're talking about involves an action or event and you want to show that the results of action/event are relevant to you now.

  What you're talking about involves an activity, a process or a state, and you want to show that something started to be true in the past and is still the case now.

  Present Perfect 1: general Case
The speaker or writer uses the Present Perfect to talk about something somewhere in the past, no matter when, so as to tell you that it is relevant to now. People often use the Perfect in this way to talk about their past experiences - especially when these are very important now, for instance in a job application, where your past experience is part of what makes you qualified for the job.

- **Present Perfect 1**: The general case
  Speaker uses PP to talk about sth somewhere in the past, no matter when, so as to tell you that it is relevant to now.
  Communism has gone. *(the face of world politics has completely changed)*

- **Present Perfect 2**: resultative use
  "I am telling you about the past history of what we are discussing, because this information will help you to draw important conclusions about what's happening now."

- **Present Perfect 3**: Durative use
  If the Present Perfect is used to talk about an activity, a process or a state, it tells us that something started to be true in the past, and goes on being the case up to the moment of speaking.

  - **For + Present Perfect**
    The Present Perfect often occurs with time expressions with for: for ten years, for all my life, for the last two hours. They are used when we look at the whole duration of the situation. Of course, we can always work out when the situation must have started!

  - **For + other tenses**
    The duration expressions with For do not have to occur with the Present Perfect. If the whole period started and finished in the past, then a past form of the verb is used.
    "My mother lived in Liverpool for 15 years."

  - **Since + Present Perfect**
    We have seen that with expressions referring to a point in the past, we have to use a past form of the verb. But the durative use of the Perfect often occurs with expressions that refer to a period of time leading up to the present moment and these may contain a reference to a point in the past -
which can be confusing! Many such expressions begin with since: since yesterday, since my birthday, since I had lunch. These refer to the starting-point of the situation in the past.

- **Since: Problem**
  Often people are taught to use a Perfect form wherever they see since - this is an example of using a trigger word to help you choose the correct form of the verb. Trigger words, however, can be rather tricky and sometimes even misleading.
  Since is one of these problematic cases, because: The word since has two functions in English.

  In most of the time expressions we have been talking about it is a preposition.

  But it can also function as a conjunction- a linking word between two clauses - and when it is used in this way it often means something like because, and introduces a clause that tells you the reason for something.

  So you need to look very carefully at the context of what you're saying or writing, to make sure you've chosen the correct form of since!

- **Perfect: Yes or No?**
  Using the Present Perfect tells your hearer to "bridge that gap". Because the Present Perfect refers to now and to some point in the past simultaneously, you can't use it with expressions that fix what you're talking about completely in the past.

  Until you go to bed at the end of this evening, you can still say: "I have seen John today" even if it was very early, before breakfast, provided that you don't mention an earlier part of today.

- **Do NOT use the Present Perfect**
  When you talk about the destruction of something
  The Titanic was sunk by an iceberg.

  When you talk about a single historical event which caused important changes in the world
  Columbus discovered America.

  When you talk about someone's death, or the life experience(s) of someone who is now dead:
Lawrence of Arabia died in a motorcycle accident.

- **Perfect in Context**
If you are talking about a particular topic and mention a piece of general information about the past using the Present Perfect, then your hearers or readers will assume that it is relevant to the topic under discussion.
A number of important buildings have been destroyed by fire.

But you use the Simple Past in case an activity a still alive person has conducted a while ago (studying) and is finished with this now:
He went to Queen’s University.

The following two pages also contain information on the Simple Past and Present Perfect, but in the context of non-Simple Past and Present Perfect topic pages. We thus separate them from the other pages.

- **Talking about the Past** (Model of interrelations between Präteritum, Perfekt (Past) and Present)
The choice between verb forms in English depends on the characteristics of what you are talking about rather than the situation in which you talk about something.
People have been talking about finding 'one voice' for the industry for many years.

- **Speech Time and Reference Time**
When you talk or write, you use different forms to indicate to your hearer or reader whereabouts in time the situation or events you refer to are situated.

In the Past the gap between speech time and reference time is made clear.

When we use the Perfect in English, we tell our hearers that we want to bridge the gap between the two points in time – not to close it, but to link the two time-points together in what we say.
Deutsche Zusammenfassung


Durch die Untersuchung wurde der Inhaltsrahmen der CING für die Grammatikstrukturen definiert, die in der empirischen Untersuchung verwendet wurden (Simple Past und Present Perfect). Ausserdem wurden die Lernfortschritte von Lernern mit der CING und deren Verhalten in der InternetGrammar beobachtet sowie ihre Erfahrungen mit dem Programm in Kommentaren zu lernrelevanten Aspekten (z.B. Autonomes Lernen, Verständlichkeit des Materials) ermittelt.

Nach einer Einführung in Hintergrund und Struktur dieser Dissertation (in Kapitel 1) beinhaltet Kapitel 2 die Analyse des Grammatikinhalts der CING in Bezug auf die Präsentation und Reichweite von Inhalten anderer, vergleichbarer (Buch-)Grammatiken und definiert die CING als deskriptive Referenzgrammatik mit zusätzlichem Übungsmaterial das der Lerner zur Wiederholung und Festigung seines Grammatikwissens einsetzen kann. Diese Inhaltsanalyse zeigte, dass die Anordnung der Grammatikthemen der InternetGrammar nicht unbedingt denen traditioneller Buchgrammatiken entspricht (siehe auch Kapitel 3.1) und dies für Nutzer ungewohnt sein kann. Daraus resultiert, dass bei einem Einsatz mit fortgeschrittenen Lernern die InternetGrammar einer Erweiterung des Inhalts bedarf.


Eine Untersuchung der InternetGrammar zu diesen Aspekten zeigte, dass weniger fortgeschrittene Lerner einen vollständigen Glossar zu den Titeln der Inhaltsbereiche sowie Unterstützung in Navigation, Materialauswahl und möglicherweise Lernstrategie (z.B. Problemlösen) erwarten.


Für einen erfolgreichen Einsatz der CING in der Zukunft hat diese Studie wertvolle Informationsarbeit geleistet. Auch in einem Lehrerunterstützten Lernszenario wie Blended Learning (Kapitel 6), wo Lerner nur in Phasen mit Instruktoren zusammen arbeiten und sonst autonom lernen, hat dies Relevanz, da sich Lernziele, Lernergruppen, Lernvorraussetzungen und Lernsituationen verändern.

Lerner können sich unbekannten Lernsituationen bis zu einem gewissen Punkt anpassen, doch bedürfen sie in wichtigen Aspekten des Lernens Unterstützung. Diese Erkenntnis der Studie hat direkte Relevanz für computerunterstützte Lernsituationen, die sich schon heute zur Regel in der Ausbildung entwickeln. Ausbildung in der heutigen Wissensgesellschaft benötigt klar definierte Unterstützungsstrukturen, die Probleme der Lerner konstruktiv in das Lernszenario einbinden. Damit wird nicht nur fachliche (z.B. in der Fremdsprache) sondern auch die
Zusammenfassung


Durch die Untersuchung wurde der Inhaltsrahmen der CING für die Grammatikstrukturen definiert, die in der empirischen Untersuchung verwendet wurden (Simple Past und Present Perfect). Ausserdem wurden die Lernfortschritte von Lernern mit der CING und deren Verhalten in der *InternetGrammar* beobachtet sowie ihre Erfahrungen mit dem Programm in Kommentaren zu lernrelevanten Aspekten (z.B. Autonomes Lernen, Verständlichkeit des Materials) ermittelt.


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ermöglicht. Nur unter diesen Voraussetzungen werden wir aktive Mitglieder einer modernen Wissensgesellschaft werden und uns ihre Vorzüge erfolgreich zu Nutzen machen können.