READING FOREIGN LANGUAGE WEBSITES: A QUALITATIVE INVESTIGATION OF STUDENTS' READING STRATEGIES IN GERMAN

by

ULRIKE TALLOWITZ

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES

(Language and Literacy Education)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

August 2008

Abstract

In this qualitative study based on constructivist learning theory, nine intermediate level university students of German were observed as they read foreign language texts on the Internet. Through observations, as well as think-aloud protocols and semi-structured interviews, the study identified Internet reading strategies the students used, and determined the difficulties they encountered in Internet reading activities. The observed strategies were related to four different types of reading tasks the students had to complete and to the language levels of the students. The four task types included: (a) scanning for specific information, (b) skimming and summary writing, (c) detailed reading and text comparison, and (d) observing linguistic phenomena in a text.

The research questions arose from the observation that, while the Internet has a positive influence on motivation, independent learning and cultural understanding (Alm-Lequeux, 2001; Brandl, 2002; Chapelle, 2000; Lee, 1997), the literature also talks of frustration on the part of the students, and of students being overwhelmed by foreign language Internet pages (Kubota, 1999; Rüschoff & Wolff, 1999; Shetzer & Warschauer, 2000). This frustration is hypothesized to be due to the fact that Internet texts are authentic texts written for readers in the target culture, and have not been adjusted to the linguistic and cultural knowledge level of foreign language students. There is still little empirical research on the specific ways students deal with these difficulties while completing Internet reading tasks.

The present study was carried out with the aim of shedding light on the Internet reading process for pedagogical purposes. The think-aloud technique of data collection permitted a deeper understanding and a more precise description of this special type of

reading than would have been possible with interviews alone. The data analysis revealed eight key factors playing a role in foreign language Internet reading: course performance level, background knowledge, motivation, strategic reading, computer skills, problem-solving style, hypertext structure, and type of task. These factors lead to pedagogical implications for designing suitable Internet tasks for foreign language students, and for scaffolding the foreign language Internet reading process.

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Acknowledgements

I would like to thank my supervisory committee, Dr. Patricia Duff, Dr. Ken Reeder, and especially my research supervisor Dr. Monique Bournot-Trites, for the support they have given me during the process of conceptualizing and writing this dissertation. I benefited greatly from their constructive criticism, their creative ideas, their encouragement, and their insistence on rigorous procedures.

A special thanks goes to Dr. Mary Wauchope for her invaluable assistance, for her thoughtful comments, and for the significant role she played in my research.

Finally, I am grateful to the students who participated in my research for their enthusiasm and their time. They have greatly contributed to my understanding of the benefits, and difficulties, that students experience when reading foreign language texts on the Internet.

Chapter 1: Introduction

1.1 Purpose of the study

This study is about reading Internet texts in foreign language teaching and learning. The study describes the reading strategies that nine university students of German used while they were reading German Internet texts, and the difficulties they encountered. Qualitative data collection methods such as participant observation and think-aloud protocols were used to gain a deeper understanding of these processes. While reading strategies with print material have been researched before, this study aimed at identifying specific Internet reading strategies, as well as difficulties specific to Internet reading. The theoretical insights gained from the study yield applications for foreign language teaching, by pointing to effective ways of integrating the use of the Internet in foreign language reading, and to efficient ways of scaffolding by the teacher.

The theoretical pedagogical framework of my study is constructivist learning theory (Brooks, 1990; Brooks & Brooks, 1993; Fosnot, 1996a, 1989; Larochelle, Bednarz, & Garrison, 1998; Mißler & Multhaup, 1999; Piaget, 1967; Reagan, 1999; Rüschoff, 1999; Steffe & Gale, 1995; von Glasersfeld, 1995a; Vygotsky, 1978). Constructivist learning theory guided the design of this study with respect to the research questions as well as the formulation of the reading tasks. Principles of this learning theory support the use of the Internet in education. Bolter (1998) claims that "the capacity to create intertextual relations among existing materials would seem to be the archetype of the constructivist view of knowledge production" (p. 10). Rüschoff and Wolff (1999) point out that since learners are guided to search for information in a vast amount of texts and hypertexts, thus being provided with a rich learning environment, essential principles of

constructivist learning theory can be put into practice: Knowledge is constructed through the interaction of authentic resources and the students' previous knowledge. As far as reading theory is concerned, the study is based on the interactive theory of reading (Bernhardt, 1991, 2002; Carrell, Devine, & Eskey, 1988; Eskey, 2002; Kamil, Mosenthal, Pearson, & Barr, 2002; Swaffar, Arens, & Byrnes, 1991), and it derives its definition of reading strategies from research in strategy use (N. J. Anderson, 1991; Cohen, 1998; Grabe & Stoller, 2002; Hosenfeld, 1984; O'Malley & Chamot, 1990; Oxford, 2001). I present these theoretical frameworks in Chapter 2.

1.2 Research problem

The use of the Internet in the foreign language classroom has been shown to have a positive influence on motivation and independent learning (Alm-Lequeux, 2001; Chapelle, 2000; Fry & Grair, 2001; Green, 1997, 2001; Lee, 1997; Walz, 1998), and teachers are encouraged to integrate new technologies into their teaching (Burke, 2002). Like many educators, I have used the Internet for "real-life" reading tasks in the classroom in order to offer a greater variety of current authentic texts and cultural information. The students welcomed this direct view into German culture. These positive experiences confirmed what the literature suggests: Young people frequently use the Internet when they seek information in their own language, and the Internet is thus a familiar and highly appreciated source of information for them (Brandl, 2002). Using the Internet for current texts in the target language also responds to one of the challenges faced by foreign language teachers, namely to get students to read in the foreign language (Bournot-Trites & Séror, 2003). Learning a foreign language always includes learning

about the target culture, and the Internet with its direct access to foreign cultures via texts, graphics and sounds makes experiential learning possible (Warschauer, 1996).

However, students also complained of the difficulty of the texts, of unexpected types of layout on German Internet pages, and their own lack of vocabulary for understanding the pages satisfactorily. These negative classroom experiences confirmed the literature on this topic. Authors such as Kubota (1999), Chun (2000) and Carrier (1997) talk of frustration on the part of the students, and of students being overwhelmed by foreign Internet pages. The reasons for this frustration are related to the fact that Internet texts are authentic texts written for native speakers of the target culture, and have not been adjusted to the linguistic and cultural knowledge level of language learners (Green, 1997; Rüschoff & Wolff, 1999). An additional problem for educators lies in the fact that, since students usually complete Internet reading tasks individually in the language laboratory or at home, and therefore outside of the classroom, teachers do not know exactly how their students approach this type of task, and what their specific difficulties are. Warschauer (2000) points out that little empirical research has been done so far about the precise way the Internet is used. With respect to reading with the aid of computer technologies, studies have mainly focused on the use of multimedia glosses and electronic dictionaries (Chun, 2007).

Based upon my personal classroom experience and the findings of the literature on the topic of Internet use, I explored the Internet reading process in more detail. In order to obtain a precise view of the process, I chose to use the qualitative data-collection method of think-aloud protocols in addition to the commonly used methods of naturalistic observation and semi-structured interviews. With the think-aloud technique, I wanted to

get a deeper understanding of students' activities during the reading process, and at the same time give students a "voice" in the instructional situation (Berg, 1999; Bournot-Trites & Séror, 2003; Jones, 2003).

Specifically, my goal was to identify the factors that come into play in the process of Internet reading when students try to complete different tasks. Are there strategies specific to reading on the Internet? There has been extensive research done on reading strategies for print texts in the first and second language (Carrell, 1989; Carrell, Pharis, & Liberto, 1989; Cohen, 1987, 1998; Haastrup, 1987; Hosenfeld, 1984; O'Malley & Chamot, 1990; O'Malley, Chamot, Stewner-Manzanares, Russo, & Küpper, 1985; Oxford, 1990; Rubin, 1987; Young, 1993), but I have not found any empirical research on reading strategies specific to reading on the Internet as a foreign language student. While some of the traditional text reading strategies will certainly be the same for Internet reading, it can be expected that there are strategies that are specific to the Internet.

Another crucial question is to determine what the difficulties for language learners are as they read foreign language web pages. Are these difficulties more related to grammar, to vocabulary, or to discourse features? Can the students handle the greater freedom and choice which hypertexts present? Do students of higher language ability differ in this respect from weaker students? As far as foreign language teaching is concerned, it is crucial to know what influence different types of reading tasks have on the strategies students use, and how the teacher can scaffold the Internet reading process. A more precise formulation of my research questions can be found at the end of Chapter 2, after the review of pertinent literature.

I hypothesize the problem to be largely due to a lack of vocabulary and cultural background knowledge – problems that are mentioned also in the literature on traditional reading (Bernhardt, 1991; Carrell, 1988; Carrell & Grabe, 2002; Eskey, 2002). In my research I tried to determine exactly *how* these factors influence the Internet reading process, and to discover possible other factors.

1.3 Significance of the study

The significance of the study lies in its contribution to research on reading on the one hand, and to the use of the Internet in the foreign language classroom on the other. The study contributes to those that investigate the *process* of reading, as opposed to solely evaluating the *product* of reading, i.e., comprehension (Alderson, Clapham, & Wall, 1995; Eskey, 2002). In constructivist terms, learning takes place as knowledge construction in the dialogue between the learner and the text, as well as the learner and the teacher (Rüschoff, 1999). In this specific situation, I also look at the interaction between the learner and the computer. The think-aloud protocols aim at understanding this interaction better and point to ways of optimizing it, for example by determining effective ways of scaffolding. One of the factors that come into play in this learning process are students' strategies, and in this area the study expands former findings of reading strategies and determines specific Internet reading strategies used. Finally, as different task types are used, the study also sheds light on the adequacy of task types for certain pedagogical goals, and can be seen in the research tradition of task-based instruction (Nunan, 2004; Pica, 2005; Skehan, 1998b).

As far as pedagogical applications are concerned, the study will help teachers make instructional choices. Teachers who know individual strategies and needs as well as the difficulties that students have while reading on the Internet will make better selections of reading materials, formulate more suitable reading tasks, and can scaffold their students' reading endeavours through other pertinent instructional techniques, thus helping students to enhance their foreign language learning.

1.4 Thesis organization

Chapter 1 introduces the topic and describes the purpose of the study, the research objectives, as well as the significance of the study.

Chapter 2 presents a review of the literature and describes constructivist learning theory as the theoretical pedagogical framework of the study, as well as the interactive theory of reading as theoretical basis for describing and observing reading strategies. This chapter furthermore reviews what the literature says about the use of the Internet in foreign language teaching.

Chapter 3 describes the methodology that this study employs. It presents the qualitative approach in educational research and enumerates the reasons why this approach is appropriate for the research questions at hand. The chapter also describes the participants and the learning context, as well as the teaching materials used in this study, and the methods of data collection and data analysis.

Chapter 4 presents a description of the data obtained for each student, as well as the factors influencing the reading process, as they emerged from the data.

Chapter 5 interprets the results and suggests theoretical as well as pedagogical and research implications derived from them. It also states the limitations of the present study and offers suggestions for further research.

The appendices include the initial questionnaire, the reading tasks, the rubrics for evaluation of the reading tasks, sample interview questions, selected synoptic tables of students' strategies, as well as one example of a think-aloud protocol to give a more precise idea of how the coding was carried out.

Chapter 2: Theoretical Framework

2.1 Constructivist learning theory

In this chapter I present essential elements of constructivist learning theory and discuss what constructivist theory can contribute to foreign language teaching pedagogy and the use of the Internet. I have used constructivist learning theory as my theoretical framework because it can provide the rationale for my research study. As will be shown, the theory of constructivism supports the use of new technologies in a task-based approach to foreign language teaching (FLT), through its principles of *learner orientation* and *process orientation* (Rüschoff, 1999). In Section 3.3.3, principles of constructivist learning theory will furthermore be used to define specific reading tasks for the study. With respect to my data analysis, constructivism provides the concepts for the interpretation of the data by looking at reading on the Internet as an active process of knowledge building. One crucial question of this study, i.e., how much help the students need when reading foreign language web pages and what type of help the teacher should provide, can be interpreted as an instance of *scaffolding*, a central concept of constructivist learning theory (Donato, 1994; Ohta, 2000; Wood, Bruner, & Ross, 1976).

2.1.1 Historical background: Piaget and Vygotsky

Constructivism is basically a theory of knowing and learning, not a theory of teaching. However, constructivist learning theory has implications for teaching through a

new view of the learning process, and the theoretical principles of constructivist learning theory can lead to pedagogical implications based on these principles.

As is often pointed out, there are many different realizations of constructivist theory (Larochelle et al., 1998). For example, distinctions are made between *radical* and *moderate constructivism* (Müller, 1997) or between *philosophical, psychological,* and *social constructivism* (Richardson, 2003). Social constructivism in this latter distinction refers to the fact that our knowledge is always determined "by such things as politics, ideologies, values, the exertion of power and the preservation of status, religious beliefs, and economic self-interest" (Phillips, 2000, p. 6). For the purposes of this thesis, I focus on constructivism in education and refer to Müller (1997) who distinguishes between *radical constructivism* and *moderate constructivism.*

Constructivism originates in philosophy and is concerned with the nature and development of knowledge. It takes a contrasting stance to Descartes' analytical and mathematical description of nature. Descartes had separated mind (*res cogitans*) and matter (*res externa*). This dualism led to the conviction that there is an 'objective' presentation of reality, independent of the observer. The goal of science was then the exact and objective description of that reality. The result is systematized knowledge, which can be transmitted from the scientist to society, especially through schools and universities. The teacher is an instrument in this process, presenting knowledge to the students in the best possible way. Knowledge in this *objectivist* theory is seen as an entity which does not change in the process of transmission.

Modern physics attacked this implicit idea of an absolute space and time and of the possibility of objectively describing nature (Capra, 1982). It was acknowledged that in

each experiment the observer changes reality, that the observer and the observed cannot be separated. Taking these insights to an extreme, *radical constructivism* in philosophy completely denies the existence of an objective reality (Maturana & Varela, 1987; von Glasersfeld, 1995b, 1998, 2003). Radical constructivism maintains that all knowledge of reality is the construction of a mental reality, and that this mental reality is not a direct representation of an external reality. Rather, individuals construct their own reality, dependent on their neuronal organization and individual experiences. This internal process cannot tell us anything "objective" about the outside world. Through processes of socialization a common consensus is created about the world – reality is thus a social construct. Language plays a central role in this process. It is no longer seen as being a mirror of reality, but the tool itself to create and interpret reality.

A less radical form of constructivism, often referred to as *moderate or social constructivism*, developed within cognitive psychology. Social constructivism is primarily concerned with processes of cognitive development and learning. This moderate constructivist framework goes back to cognitive psychologists such as Neisser (1967) and Rumelhart (1980), who emphasize the constructivist activity in processes of perception, understanding, acquisition of knowledge, and memory. Similar to the radical constructivists, social constructivists claim that the model of *transfer* of information has to be replaced by one of *construction* of information within the cognitive system. In this process, sociocultural and personal factors play an important role. Social constructivism does not negate the existence of a real world that we experience, but its followers hold that *meaning* does not exist in the world; rather, it is created by human beings through

their activity in the world (Lantolf & Thorne, 2006). VanPatten (1997) formulates the process of knowledge-making in the following way:

> Much of human knowledge and the (inter)action that springs from it is constructed. By this we mean that out of the rich source of information available to human beings, they must cull, interpret, integrate, and, if necessary, restructure the information in order to make sense of it. (p. 1)

Since I am interested in processes of cognition and understanding, I will use the moderate (or social) form of constructivism as my theoretical framework. Often Jean Piaget and Lev Vygotsky are named as predecessors of constructivism in psychology and education (Wertsch, 1985, 1991). Therefore, I will present those aspects of their theories that relate to my question, i.e., the application of constructivist principles to foreign language learning.

Jean Piaget (1896-1980)

Piaget was a Swiss professor in biological sciences whose particular interest was epistemology. He was interested in knowledge, and how children come to know their world. In his studies of children's cognitive development, he observed children in their interaction with the world and found that they go through four qualitatively distinct stages of cognitive development. These stages are: *sensorimotor* – from birth to age 2; *preoperational* – age 2 to age 7; *concrete operational* – age 7 to age 11; and *formal operational* (abstract thinking) – age 11 and up (Piaget, 1967). In each stage, different cognitive tasks can be accomplished. In the sensorimotor stage, the mental structures are mainly concerned with mastery of concrete objects; in the preoperational stage, mastery

of symbols takes place. In the concrete stage, children become able to master classes, relations, and numbers, and they learn how to reason. In the last stage, abstract thought becomes available to the child. It is important to note that these stages build upon each other; that is, no stage can be attained before having mastered the previous one. Therefore, Piaget's theory can be called a *readiness approach*.

Other concepts which are essential in Piaget's theory of knowledge-building are *assimilation*, *accommodation*, and *equilibration*. Assimilation is the modification of an incoming stimulus, or input information, by the activity of a pre-existent mental structure. Accommodation is the active modification of the mental structure itself, so as to adapt to the input. In the equilibration process, the child tries to reach a balance between assimilation and accommodation processes. This becomes necessary when the child experiences a new event or when, in Piagetian terms, "disequilibrium" sets in. A disturbance or impediment forces the child to assimilate and accommodate the new information until equilibrium is attained. In this dual process, "schemata" are formed (Piaget, 1967, p. 10). According to Piaget, individual differences in cognitive development are due to differences in equilibration done by the child. Intelligence grows through the processes of assimilation and accommodation. Therefore, educators should provide as many opportunities as possible to allow these processes to take place. Children need to explore, to manipulate, and to experiment:

> In order to know objects, the subject must act upon them, and therefore transform them: he must displace, connect, combine, take apart, and reassemble them. From the most elementary sensorimotor actions (such as pulling and pushing) to the most sophisticated intellectual operations, which are interiorized actions, carried out

> mentally (e.g. joining together, putting in order, putting into one-to-one correspondence), knowledge is constantly linked with actions or operations, that is, with transformations. (Piaget, 1970, p. 704)

Cognitive development is seen by Piaget as an active and social process, in that it only occurs in interaction with the objects and human beings in the world around the child. The child is not a vessel to be filled with facts; rather, knowledge is constructed in an interactional process, by acting on things. Piaget himself called his theory of knowledge-building "dialectic constructionism" (Piaget, 1971, p. 212). Knowledge is only possible through activity. Learning needs the participation of the learner:

> ... to understand is to discover, or reconstruct by rediscovery, and such conditions must be complied with if in the future individuals are to be formed who are capable of production and creativity and not simply repetition. (Piaget, 1973, p. 20)

Lev Vygotsky (1896 – 1934)

Vygotsky was born in the same year as Piaget and did his psychological research in Russia in the 1920s and 1930s, until his early death. Whereas Piaget sees the cognitive development of children dependent upon biologically manifest developmental phases, Vygotsky sees the process as predominantly social in nature. He maintains that learning is a socially mediated activity. His *sociocultural theory*[1] describes learning as an interaction that "unfolds during the dialogic activity collaboratively constructed by learner and tutor" (Vygotsky, 1986, p. 367). His theory is based on the conviction that

[1] Vygotsky has never himself called his theory thus. The term has been introduced by James Wertsch (1991) in order to bring Vygotsky's theory closer to the North American readers (Lantolf & Thorne, 2006).

human mental activity is inherently social in origin, as a consequence of the linguistically mediated interaction between children and other members of the sociocultural world. According to Vygotsky, thinking and problem solving can be placed into three categories. Some tasks can be performed independently by the child; some tasks cannot be performed at all (yet). Between these two extremes are tasks that the child can perform with help from others. Vygotsky has called the dynamic process in which the child and adult collaborate in constructing a mutual activity frame "the zone of proximal development (ZPD)" (Vygotsky, 1978, p. 84). The individual develops with assistance from and in collaboration with more experienced members of society.

Vygotsky has discussed the differences between his own and Piaget's approach in his preface to the Russian edition of Piaget's first two books (reprinted in Vygotsky, 1962). According to Vygotsky, the development of the mind, including language and rational thought, proceeds from the social to the individual domain. Language is first used to guide the activity of the child (private speech), as well as for social interaction. Then this language is internalized, it "goes underground" (Vygotsky, 1962, p. 18) and becomes the structure of the child's thinking (inner speech). Thus, patterns of thinking are not primarily determined by innate factors evolving from internal to socialized speech (as in Piaget), but are the products of social activities:

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first between people (interpsychological), and then inside the child (intrapsychological). (Vygotsky, 1978, p. 57)

This evolution from the external (or social) functions into internal (or mental) functions is the process of *internalization*. In this process, there is no simple reproduction of the

mental activity of another individual; rather, internalization "transforms the process itself and changes its structure and functions" (Vygotsky, 1981, p. 163).

The differences between Piaget and Vygotsky have been discussed extensively in the literature (e.g. Bain, 1975; Cole & Wertsch, 1996; Lantolf & Thorne, 2006). These differences are partly due to culturally and historically determined philosophical presuppositions. Those authors who emphasize more the social aspect of knowledge construction and who base their approach more on Vygotsky than on Piaget call their approach "sociocultural theory" (Donato, 2000; Lantolf, 1994, 2000b; Lantolf & Thorne, 2006; Pavlenko & Lantolf, 2000; Wertsch, 1991). For our purposes, it is the similarities in their approaches that are more relevant. The main idea is that both psychologists treat learning as an active cognitive process leading to increasing levels of capabilities. Modern cognitive psychologists have described this process as a construction of new concepts on the basis of existing knowledge in schemata and frameworks (Neisser, 1967; Rumelhart, 1980). The learner's prior knowledge influences the processing and transformation of new information through strategies such as selection, hypothesis-formation, analysis, decision-making, interpretation and synthesis. In this way, the learner is able to go beyond the information given (Bruner, 1973). In terms of instructional design, the main implication from both Piaget and Vygotsky is the call for an active learning situation and a learner-centred approach, where students are given the opportunity to act upon their environment in a self-directed way. According to Vygotsky, learning must furthermore take place in a dialogic situation, since knowledge is constructed in the ZPD between the novice and the expert. This stronger emphasis of the social and dialogical dimension has led to the growing incorporation of sociocultural

theory within second language acquisition research (e.g., Lantolf, 2000b). The next section will show how these ideas have been taken up in modern pedagogy.

2.1.2 Constructivist theory in education today

In the 1960s, Jerome Bruner developed a model of "discovery learning" which was based on Piagetian thought (described in Bruner, 1973), but only in the last two decades have constructivist principles been explicitly adapted in educational theory in North America (Brooks, 1990; Brooks & Brooks, 1993; Cole, 1985; Lantolf, 2000b; Lantolf & Thorne, 2006; Phillips, 2000).

Educators in different fields, especially in mathematics (Cobb, Wood, Nicholls, Trigatti, & Perlwitz, 1991), science (Tobin, 1993), social studies (Olsen, 2000), literacy or language arts education (Fosnot, 1989, 1996b; Moll, 1990; Newman, Griffin, & Cole, 1989) offer pedagogical implementations, based on the basic axiom that learning is an active process, where knowledge is not merely transmitted to the learners, but constructed by the learners themselves in their interaction with the world. Constructivist learning theory has led to essential changes in central aspects of teaching methodology. In the following paragraphs, I summarize and evaluate these aspects.

Role of the learner

Constructivism demands more active involvement from the students. They "have to think for themselves, not wait for the teacher to tell them what to think, ... to revisit and revise constructions" (Airasian & Walsh, 1997, p. 448). Because of rapid developments in our "knowledge society" with its huge information requirements, it is no longer

possible to simply gather declarative knowledge. Rather, one has to learn how to keep informed, that is, to learn how to learn and to solve problems (procedural knowledge). The perspective has shifted from the *product* of learning to the *process* itself. "Information needs to be processed and transformed into knowledge" (Rüschoff, 1999, p. 80). Knowledge is something students must construct and less something that is transferred to them through books and teachers. Constructivist learning theories tend to follow Vygotsky's view that there are no pre-established phases or developmental stages in the student's learning, and both teacher and student have the responsibility to determine in each moment the learner's readiness for new concepts and skills (Aljaafreh & Lantolf, 1994). This means students need as many choices as possible to work with and choose those elements of information that they can digest in each moment. In constructivist thought, all learners are assumed to be unique and must control their own instruction. But in Merrill's (1992) critique of this view, almost unlimited control over their learning might be troublesome for some, especially weaker, students. Some students might not be as goal-oriented as supposed by constructivist theory, especially when the subject matter is very complex. In a similar vein, some authors have criticized constructivist theory, which does not show enough concern for "entry behaviour" of students, i.e., their level of proficiency at the beginning of their learning (Dick, 1992). Defining this level more clearly and adapting teaching content, tasks, and feedback to it are necessary conditions to make constructivist learning successful.

Role of the teacher

In a more traditional view of education, teachers were supposed to be masters of particular domains of knowledge and their job was to transmit their expertise in these domains to students in the most efficient and effective manner possible. Students were expected to memorize the facts and concepts of the learning domain and practice its skills until they had mastered them. They then had to demonstrate that mastery in appropriate tests. In contrast, the constructivist view holds that teachers should be facilitators who help students construct their own understandings by carrying out challenging tasks (Brooks, 1990). The role of the teacher is to provide opportunities to explore, to manipulate, to experiment, to question, and to help the students search for answers for themselves. Donato (1994) describes this *scaffolding* in the following way within a Vygotskian approach: "In social interaction a knowledgeable participant can create, by means of speech, supportive conditions in which the novice can participate in, and extend, current skills and knowledge to higher levels of competence" (p. 40). Barron (1998) describes the three basic types of scaffolding the teacher should offer as *coaching* (recruiting interest, supporting students in their pursuit of specific goals), *guiding* (simplifying projects by separating tasks into manageable steps), and *modeling* (demonstration of processes and strategies used by the expert). As these scaffolding activities and the self-directed learning by the students can be very time-consuming, some authors hope that the use of the computer will free the teacher in various phases of instruction (Brandl, 2002).

Learning content and transmission of knowledge

According to constructivist theory, the goal of learning is not to master the content, but rather to understand and use information to solve real-world problems. In mathematics and science, for example, the goal is to guide students to "think mathematically" or "scientifically" (Cognition and Technology Group at Vanderbilt University, 1992; Spiro, Feltovich, Jacobson, & Coulson, 1992), and thus become able to solve problems in these domains. For these strict constructivists, the only allowable content to achieve this is the "authentic task," that is, a task that has its counterpart in an activity in the real world. As a consequence of this axiom, some constructivists hold that content cannot be pre-specified (Bednar, Cunningham, Duffy, & Perry, 1992). Rather than teaching a point and giving illustrative examples, a "slice of life" is to be shown to the student, together with real-life tasks. The general domain of content can be delineated, but the students choose what information they need for their problem solving.

One challenge here consists in selecting relevant tasks and experiences. Does the constructivist teacher do this by intuition? Is there a systematic way of selecting relevant tasks for specific learning goals? Pre-designed learning systems using hypertexts or videodiscs guide the student towards their construction of knowledge (Duffy & Jonassen, 1992; Spiro et al., 1992), but when such programs are not used, this responsibility rests with the individual teacher.

Evaluation of learning outcomes

Measuring learning outcome changes radically with constructivist theory. J. S. Brown et al. (1989) argue that the goal of learning is to improve the ability to use the content

domain in authentic tasks. Therefore, student evaluation consists not of measuring *what* students have learned, but of looking at *how* students address problems in the content area, and how they defend their decisions (Bednar et al., 1992; Spiro et al., 1992). Evaluation in this approach is not done by measuring the amount of declarative knowledge that students have gathered and memorized, but to see how they use procedural knowledge and successfully solve real-life problems in their domain. It is not the *product* of learning that is measured, but the *process* of knowledge construction. The difficulty for the evaluator lies in operationalizing this type of learning outcome. When is a task completed? Are there different degrees of success? Evaluation seems to be left to subjective judgments. Cunningham (1992) points to the problem that successful task resolution could have different reasons, and that we do not know what a student has really *learned*. Other authors are concerned with the question of how group work can be assessed (Dick, 1992). As individual students may choose very different types of tasks, there is furthermore the lack of comparability (J. D. Brown, Hudson, Norris, & Bonk, 2002). The present study has similar limitations. Students choose different web links, often formulate their own questions about a topic, and it is difficult to determine and compare learning outcomes. *Rubrics* of evaluation which describe outcomes in terms of complexity and depth of thinking have been used to make the evaluation standards as comparable as possible (see Section 3.5.5 and Appendix 4).

One may conclude that constructivist learning environments make learning more active, more individualized, and more situated in real-life contexts. Learning theory tells us that it will therefore be more meaningful and successful (Kohonen, 1992). This will remedy a shortcoming of traditional pedagogy which, as Perkins (1992) laments, “has not

been supportive enough of the work of construction going on in the mind of the learner" (p. 49). Another positive consequence of constructivist learning is the enhanced ability of transfer on the part of the student. "The more the problem-solving learning situation represents the real world, the more likely it is that the student will transfer the skills to other problem-solving situations" (Dick, 1992, p. 91). The element of facilitating transfer of knowledge to new situations seems to be one of the main advantages that constructivist learning has over traditional linear learning. The claim is that only learning which is constructed in specific real-life situations, especially when it is taken to a reflective level, can be used again in novel situations (Sidman-Taveau & Milner-Bolotin, 2001). Memorized facts acquired through decontextualized learning are believed to remain isolated knowledge that can be reproduced in tests but not applied to new situations.

Below, I present a set of principles which Müller (1997) has formulated, and which can be seen as representing the core elements of a constructivist learning environment:

- Learning is an active and constructive process
- Successful learning is promoted through situated social activity in authentic contexts
- Learning has to be related to previous knowledge
- Successful learning is made possible by discovery and problem-solving activities, rather than through planned instruction
- Learning environments have to be complex, interesting, and authentic, and leave room for hypothesis formation and learner activity
- The teacher has the role of facilitator and supporter
- Acquisition of knowledge cannot be predetermined, since knowledge construction

follows the principles of self-organization and emergence

- Ideally, knowledge is thus constructed as a network which is transferable to new situations, and experienced as relevant by the learner
- A corollary effect of this kind of knowledge construction is the ability to cooperate and to take responsibility for one's own knowledge and actions.

(Müller, 1997, p. 84, my translation)

In order to realize these principles, the constructivist learning process must be supported by a rich learning environment. Constructivist pedagogy thus consists of creating such a learning environment (Rüschoff, 1999). Constructivist pedagogy does not prescribe specific instructional techniques, as for example audio-lingual teaching approaches did. Rather, the teacher has to create the environment and to find appropriate tasks which get the learners engaged in the construction of knowledge.

I will now show how constructivist principles have been applied specifically to foreign language teaching.

2.1.3 Constructivist approaches in foreign language teaching

With respect to second and foreign language learning, constructivist principles have been applied to Spanish (Donato, 2000; Lantolf, 1997; Nocon, 2002; Sidman-Taveau & Milner-Bolotin, 2001), German (Alm-Lequeux, 2001; Chun & Plass, 2000; Kramsch, 2000; Legutke, 1999; Müller, 1997; Rüschoff & Wolff, 1999), Japanese (Takahashi, 1998), English as a Second Language (Donato, 2000; Moll, 1990), and teacher education (Blyth, 1997), to provide just a few examples. As far as SLA research goes, Vygotskyan psycholinguistics has greatly inspired the investigation of *private speech* (Guerrero,

1994; McCafferty, 1994; Pavlenko & Lantolf, 2000), *scaffolding* (Aljaafreh & Lantolf, 1994; Donato, 1994; Ohta, 2000; van Lier, 2000), *collaborative dialogue* (Donato, 2000; Swain, 2000), *learner goals* (Gillette, 1994), and has led to a critical view of *tasks* in research (Coughlan & Duff, 1994; Roebuck, 2000). The two volumes of contributions to sociocultural theory in second language learning by Lantolf and Appel (1994) and Lantolf (2000b) give a comprehensive overview of these new perspectives. But constructivist principles had already been implicitly present in *communicative foreign language teaching* in the last two decades. Language in this approach is seen as a means of "doing things with words" rather than as a set of rules in a static system (Canale & Swain, 1980; Widdowson, 1978, 1983). The language learner learns the language in order to become a competent member of a speech community (Hymes, 1972). *Learner-centredness* is another important characteristic in communicative approaches (Bensen & Voller, 1997; Cumming, 1990; Nodari, 1996; Nunan, 1998; Wenden, 1982), and which is crucial to constructivist learning theory as well. The concept of *authenticity,* central to communicative and interactive approaches in FLT, also obtains a new meaning in relation to constructivist theory. In foreign language pedagogy the call for authenticity was a reaction to the artificial materials in the audio-lingual approach, where simplified texts were written by textbook authors in order to teach a specific grammar point. The texts were not real cultural products, and did not provide authentic samples of second language (L2) texts. Research shows, however, that interlanguage (or the learner's grammar) develops best with authentic texts that are at an appropriate level of difficulty (Krashen, 2004; Mazza, 2000; Omaggio-Hadley, 2001). For this reason, the communicative approach has always suggested using authentic materials when presenting

the learner with the L2 (Nunan, 2004).[2] Authentic texts in a wide array of contents and genres[3] help to create the learning environment that forms the basis for students' hypothesis building. Linguistic forms are thus acquired in contexts where they typically appear. Constructivism likewise calls for authenticity when real-world tasks are advocated as the best form of constructing knowledge. Through tasks, learners do things *with* the language instead of only learning *about* it. SLA research has developed the concept of *task-based language teaching* (TBLT) as a way to achieve experiential learning (Nunan, 2004; Prabhu, 1987; Skehan, 1998b). Without explicitly referring to constructivist learning theory, these authors promote constructivist principles when claiming that using the language in interactive and meaning-focused tasks will lead to language acquisition.

As has been shown, relatively isolated concepts in modern foreign language pedagogy, such as language as a communicative activity, learner-centredness, authenticity, and task-based learning, can well be subsumed under a constructivist perspective. The value of constructivist epistemology for foreign language education lies in its explanatory, legitimizing and justificatory power (Reagan, 1999; von Glasersfeld, 1995a). As tasks are central to my study, I describe briefly some pertinent research that has been done on task-based education.

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[2] This principle of authenticity in FLT has later been extended to *content teaching*, where the focus is on content in subject matter, rather than on the form of the target language (Mohan, 1986). Bilingual immersion education follows the same principles.

[3] The term "genre" refers to a typified socially recognised form that is used in typified social circumstances. It has characteristic features of style and form that are recognised, either overtly or covertly, by those who use the genre (Clapham, 1996).

2.1.4 Learning through tasks

According to cognitive learning theory, acquisition takes place on the basis of hypothesis-formation when engaging in active and meaningful use of the language (Long & Crookes, 1991). Skehan (1998b) claims that a task-based approach leads to naturalistic language acquisition and causes the underlying interlanguage system to develop. The reason for this lies in the nature of the task. It is an activity in which

- meaning is primary;
- there is some communicative problem to solve;
- there is some sort of relationship to comparable real-world activities;
- task completion has some priority;
- the assessment of the task is in terms of outcome. (Skehan, 1998b, p. 95)

Skehan's emphasis on the active participation on the part of the student, through tasks, makes the relationship to constructivist learning theory evident. There are several SLA studies that investigate different factors of tasks and their influence on learning. Tasks in these studies are mostly related to language production. For example, Prabhu (1987) observed that "reasoning-gap tasks," where students had to complete complicated tasks involving decision-making, led to the production of the most adequate language. Pica (1993) investigated the interactions between learners during task completion and found that negotiation of meaning during the interactions had a positive influence on language acquisition (see also research done in this area within sociocultural theory, e.g. van Lier, 2000). Duff (1986) examined the contrast between convergent and divergent tasks and found that there is no difference in the amount of language produced but that the divergent task (e.g., debates) produced longer and more complex conversational turns.

Foster and Skehan (1996) measured student performance in terms of fluency, complexity, and accuracy. They found that personal and decision tasks lead to higher performance accuracy than narrative tasks, while personal tasks lead to lower complexity than decision and narrative tasks. Arguing within a sociocultural framework, Coughlan and Duff (1994) show that tasks can have very different interpretations by the students, and thus different realizations, depending on the individual students, their motives and the situation. They had language learners from different cultural backgrounds describe a picture in their L2 (English), and found that the participants realized the same task in very different ways, depending on their cultural background, learning experiences and how they conceptualized the task. They also showed how one learner performed the "same" task, two years later, very differently than the first time. These findings support Vygotsky's claim that each student participates in tasks according to their developmental level. Often teachers have specific goals for a task, but the student will carry out the task in a different way. The sum of situation, goals, and operations are called "activity" by Coughlan and Duff, in accordance with sociocultural theory. In SLA research it is therefore important to not only look at the outcome of a task in terms of linguistic data, but also to observe what kind of activity the students engaged in, and to search for explanations. The think-aloud protocols in my study allow me to observe the students' activity in this sense.

Skehan (1998b) developed a three-way distinction for the analysis of tasks, based on "code complexity, cognitive complexity, and communicative pressure" (p. 99). *Code complexity* refers to the complexity of the language necessary for the task, in terms of grammatical structures and vocabulary load. *Cognitive complexity* refers to the thinking

required for the task and includes aspects such as familiarity of the topic, familiarity of the genre, or familiarity of the task itself. This category also refers to the information organization in the task and the clarity and sufficiency of the information given. *Communicative stress* refers to performance conditions such as time limits and time pressure, to the type of response that is required, and to opportunities to control the interaction. All three distinctions are of relevance in Internet reading tasks, and the four tasks of this study are analyzed along these distinctions in the methodology section below.

2.1.5 Constructivism and the use of new technologies

Constructivism is often linked to the use of new technologies. Duffy and Jonassen (1992) explain the recent interest in constructivism as a consequence of the volume of information which has to be processed, and new opportunities in technology. While traditional learning methods cannot help students meet the challenge of storing and retrieving vast amounts of information and preparing them for modern society, hypermedia seem to offer feasible solutions. They allow for experiential learning through virtual worlds and the possibility to manipulate them. The Internet, with its vast array of possibilities for choice, can be used as an interactive learning environment to promote exploratory and problem-solving activities (Crook, 1994; Warschauer & Healey, 1998). In hypertexts, students come upon relevant concepts again and again from different perspectives, and are thus able to contextualize them. Furthermore, in order to solve the presented problems, learners have to combine different sources of knowledge and will thus improve their cognitive flexibility. As Spiro et al. (1992) explain:

> The realm of constructive processes must be taken beyond the retrieval of knowledge structures from memory (for the purpose of 'going beyond the information given' in some learning situations), to also include the independent, flexible situation-specific assembly of the background knowledge structures themselves. (p. 72)

In the field of foreign language learning and teaching, World Wide Web materials can, through images and sounds, create an atmosphere that mirrors real-life contexts in the target culture (Kubota, 1999; Lee, 1997). Linguistic forms are presented as they occur in real-life foreign culture texts. Using the potential of this "rich learning environment", learners can seek their own resources, ways of learning, speed of learning, and application of their knowledge. Technology thus helps the learner to construct knowledge through tasks and experiences. Authentic tasks can be performed, i.e., activities which a native speaker would undertake on the Internet, such as searching for travel information or reading film and book reviews. Furthermore, through the use of cognitive tools such as concordances, dictionaries and other databases, the computer allows for growing student autonomy (J. N. Davis & Lyman-Hager, 1997).

Rüschoff and Wolff (Rüschoff, 1993; 1999) maintain that constructivist concepts such as learning by construction instead of instruction, learning to learn, learner autonomy, and social learning in small groups can be adequately implemented using new technologies. Chun and Plass (2000) agree with this evaluation: "The Internet and the World Wide Web are ideal communication tools and networking tools, as they provide the medium both for conveying thoughts and for negotiating with others" (p. 153). Alm-Lequeux's (2001) exploration of Internet texts as authentic material, where foreign

language phenomena can be experienced first-hand, is a good example of combining constructivist principles and technological possibilities (see Section 2.2.2 below).

2.1.6 Implications for the design of this study

Notwithstanding the above-mentioned critical issues, such as the danger of too much choice for weaker students, the often neglected level of proficiency of students at the beginning of their learning, the great responsibility for efficient scaffolding that this approach requires of the teacher, and the unresolved issue of evaluating open-ended tasks, it can be deduced from the literature that constructivist learning meets the demands of the modern foreign language classroom in a knowledge society. In such a society it is more important to learn how to retrieve information than to gather a mass of declarative knowledge. As constructivist learning theory is concerned with the *process* of knowledge building rather than with the product, it is an adequate theoretical basis for observing selected domains of foreign language activity, which in this study is the *reading process*. Likewise, it has been shown that constructivist learning theory supports the use of the Internet in the classroom as it promotes active construction of knowledge rather than passive reception of teacher-selected texts. Furthermore, the Internet makes experiential learning possible through the modalities of images and sound. In this study, constructivist principles have been used to design Internet tasks which answer to the requirement of creating a rich learning environment. Constructivist learning is an active type of learning, where students learn through problem-solving in tasks; therefore I have chosen to analyze different tasks with a view to their efficiency for knowledge building. The tasks are authentic in the sense that they have a definite communicative purpose, they use material

that is part of the discourse community of the target language, and through their openness leave the students to construct their own knowledge about the target culture and target language. In accordance with the constructivist approach, the teacher acts as a facilitator who scaffolds the students' self-determined work on the computer.

Constructivist learning theory can furthermore be used to analyze and interpret the observations and think-alouds, taking into consideration the individual situation of the students (information collected through the questionnaires). While focusing on Internet strategy use in the FL classroom, the study at the same time sheds light on some of the questions which are still problematic in the literature on constructivist teaching approaches; for example, whether both higher proficiency and lower proficiency students benefit from the greater autonomy of constructivist tasks. What kind of help do weaker students need in this context? Or, formulated in constructivist terms, how much does the teacher have to scaffold the process of knowledge construction, and what exactly is the role of the teacher in this process? Furthermore it will be fruitful to determine which tasks are most appropriate for knowledge construction, and to formulate a set of criteria for task selection or task development.

2.2 The use of the Internet in foreign language teaching

2.2.1 Reading print material vs. reading on the Internet

In recent years the use of new technologies in the foreign language classroom has been welcomed as "revolutionizing learning and teaching" (Carrier, 1997, p. 280).[4] Some

[4] Most of the articles I will discuss here refer to foreign language learning, for example in studies of German, Spanish or Japanese for North American (anglophone) students. However, I have also included

authors see in it the appropriate form of responding to the requirements of our information or knowledge society (Rüschoff & Wolff, 1999). Others believe it will make learning a foreign language more experiential and autonomous (Brandl, 2002; Green, 2001; Legutke, 1999; Swaffar, Romano, Markley, & Arens, 1998). However, as Swaffar (1998) observes, there is still little empirical research on the topic. In this chapter, I explore what the literature reports both on the assumed advantages of using one of the new technologies and on the observable effects when this technology, the Internet, is introduced in the foreign language classroom, especially with respect to reading.

Some technologies such as CD-ROMs and computer learning software are very often still based on traditional structural practice tasks, for example multiple choice, substitution, and completion. Newer programs using the Internet and creating "virtual worlds" by simulating the target culture offer collaborative learning environments, and thus promise new ways of learning, due to their openness and potentially more interactive character (Reeder et al., 2001). On the Internet, interaction takes place on two levels, at the human-machine level, and at the human-human level. The first level is represented by the World Wide Web and its associated hypertext architecture. The reader constructs texts by interactively clicking on hypertext links during the reading process. Here, interaction takes place between the reader and the sum of all possible Web-accessible texts. The second type of interaction refers to the communication with other users, e.g. in E-mail exchanges and in networked classrooms where oral discussion is (partly) replaced by discussions on the Internet. Speaking and writing skills are claimed to be enhanced by these forms of communication (Beauvois, 1992; Chun & Plass, 2000; Sanaoui & Lapkin,

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studies within the field of English as a Second Language and first language reading instruction. I believe that the general issues, e.g. authenticity of texts, structure of hypertexts, etc. are similar for all three areas.

1992; Swaffar et al., 1998). Müller-Hartmann (1999) gives a detailed description of a project where students from different cultures (and different first languages) communicated via E-mail, and points out the high potential for intercultural learning that this type of project has. Most studies on networked classrooms are done in the area of English as a Second Language (ESL); their focus very often is on empowering students to express themselves through written communications, when they might otherwise have problems participating in classroom discussions, for personal or cultural reasons (Markley, 1998; Sullivan, 1998; Yim, 2005).

The present study deals solely with the human-machine level, in that it investigates the reading of foreign language websites. Many researchers and pedagogues in reading education believe that the changes brought about by the Internet will be profound. They see digital technologies not only as an extension of print technology, but claim that their unique characteristics will alter the very idea of reading. "Reading from the screen is less a passive act of decoding a message from a single, authoritative author than a self-conscious act of creating knowledge from a variety of sources" (Chun & Plass, 2000, p. 521). Reinking (1998), in the introduction to his handbook on literacy and technology, talks about the widely held view that we are "heading toward a post-typographic world" (p. xi), and that even if this will not be the case in the very near future, digital forms of reading and writing are already very predominant. Reinking believes that there is an essential difference between printed and digital texts, and that this will lead to a broader definition of literacy.[5] For example, visual representations are part of digital texts and

[5] This is similar to Reeder et al. (2001)'s argument that hypertext experiences are qualitatively different from print mediated experiences, and hence must be assessed quite differently, using different assumptions and methods.

have to be incorporated in the decoding of a text. This can be a challenge, but for the most part visual representations enrich the reading experience, support the comprehension of the text, and promote motivation. Hypertexts are, furthermore, dynamically alterable, they are "texts-in-progress." New areas of knowledge are constantly added, and this presents a further challenge for the reader. In hypertexts the information is no longer represented in a linear form, but as a network of information which the user has to combine and relate. As Bolter (1998) observes, "Reading or browsing the Web requires skills in deciphering the possibly complex relations among pages, as well as conventional skills required by the linear prose on each page" (p. 4). Literacy skills therefore have to be extended to include locating information on the World Wide Web, reading hypertexts, composing E-mail messages or developing strategies for composing hypertexts oneself (Reinking, 1998). To be able to function successfully in today's society requires not only a large quantity of knowledge in specific areas, but also the knowledge about how to obtain this information, to choose adequate materials from which to extract the knowledge, to organise and evaluate it. Shetzer and Warschauer (2000) speak of an "electronic literacy" which involves the ability to find, organize, and make use of information, but also to evaluate and interpret what is found. While reading any printed text is an active process of meaning construction, this is even more the case with hypertexts. Making sense of Internet texts as well as evaluating the reliability and accuracy of the information requires skills that have to be specifically learned. For all these reasons, some authors think that electronic literacy will have to be part of the basic learning requirements and that it should therefore be included in any foreign language curriculum (Warschauer, 2002).

2.2.2 Wealth of authentic foreign texts and intercultural learning

With respect to the pedagogical use of the Internet in the foreign language classroom, authors mention especially the large number of authentic foreign language texts which one can find on the World Wide Web, and which are otherwise not easily available in North America. For example, Green (1997) talks of the WWW and its educational opportunities as a "treasure chest of information waiting to be discovered" (p. 253). Green believes that the Internet can be used to improve the students' reading and writing skills, as well as their cultural knowledge. She bases her argument on Krashen (1982), postulating that the Internet can provide additional comprehensible input. However, this claim points to a first critical issue: many authors report that unedited Internet texts are too difficult for the language learner, and may therefore often not be comprehensible enough to promote language acquisition. This is a crucial dilemma in Internet reading and one of the issues the present study addresses.

In an equally enthusiastic manner, Walz (1998) sees the "almost endless supply of authentic documents" on the web as a way "to develop the ability to use foreign languages as we use our native language ... learn other disciplines and ... communicate and share our knowledge with others" (p. 103).[6] Walz enumerates different text types that can be found on the web and used in the classroom: advertising, news, information about specific topics, and personal homepages. He points out, however, that the way these documents are used in the classroom will make the crucial difference in obtaining

[6] This learning goal forms part of the (American) National Standards in Foreign Language Education Project (1996). The Standards present five "Cs" as areas of competence: Communication, Cultures, Connections, Comparisons, and Communities. See also Omaggio-Hadley (2001, p. 37).

positive results. Kern and Warschauer (2000) point to the possibility of enhancing students' world knowledge, as well as enabling them to take part in a new "discourse community" (p.5). On the Internet, students can search through a large number of files around the world and access authentic materials that correspond to their own personal interests. SLA studies point out that authentic texts are the basis for the development of reading skills because they show the necessary text feature of redundancy which makes it possible to use contextual clues (Alderson, 2000; Bacon & Finnemann, 1990; Crookes & Gass, 1993; Omaggio-Hadley, 2001; Peacock, 1997; Young, 1993), and constructivist theory likewise claims that authentic texts form the environment in which the student builds his/her knowledge by interacting with the computer (Reeder et al., 2001).

Another didactic use of authentic Internet texts is given by Alm-Lequeux (2001). She describes a cultural project which has as one of its goals the teaching of a grammatical point. She uses the Internet to show typical contexts for the grammatical realization of reported speech. Alm-Lequeux is in favour of discourse-oriented grammar learning, i.e., to start from the *function* that a grammatical structure has in a (spoken or written) text. She finds this approach in agreement with the Vygotskyan axiom of learning as social activity. Her theoretical assumptions lead her to consider authentic texts on the Internet as a superb source for learning how to read in the foreign language, and to be confronted with new linguistic forms in a natural context. Grammar is learned in an inductive way. It could be objected that the same can be done with printed authentic texts. However, because of the additional factors of visual representation, a more sensual experience, the feeling of actually taking part in the foreign culture, and the possibility of choice from a vast number of texts, and thus more interaction, it can be assumed that the Internet would

make the point of "authentic contexts" more forcefully to the student. Alm-Lequeux's psychological argument for using Internet texts is very interesting. She sees work on the Internet as an example of the *Zone of Proximal Development* in Vygotskian theory. She describes the development from *object regulation* via *other regulation* to *self-regulation* as a gradual process of growing autonomy, and decreasing input on the side of the instructor. The first phase includes tasks that allow students to choose from a limited number of printed texts; the second is made up of tasks that must be completed with the aid of Internet texts. These tasks are suggested by the teacher, and their outcome discussed together with the student. The final, autonomous phase has been reached when the learner is able to read Internet texts independently and can gain from them without the teacher's scaffolding. By graduating Internet texts for students and making tasks increasingly more complex, the teacher can help the students in their achievement of greater autonomy. As work on the Internet is done individually, this graduated complexity can be adjusted to each student's specific level of proficiency.

Apart from using the Internet as a source of authentic target language texts, the goal of *intercultural learning* is very often put forward. Some authors emphasise that the Internet offers current cultural material which can normally be obtained only when travelling to the target country (Fry & Grair, 2001; Lafford & Lafford, 1997). Facts from textbooks that are outdated in a matter of a few years can no longer be considered acceptable for today's educational demands on information and knowledge levels.

But intercultural learning has another dimension besides providing information about the target culture. Intercultural learning has been defined as getting to understand others and relating this experience to one's own life. Kramsch (1993) speaks of "the learners'

discovery and understanding of self through others" (p. 184). The understanding of the other culture is based on one's experience of it through reading, travelling, or speaking with representatives of that culture, and then relating these new experiences to one's own. Kramsch sees in multimedia a revolutionizing way of using real-life materials in the classroom and the possibility of reaching an intercultural understanding by critically questioning one's own and the other culture. Various studies have tried to establish the attainment of this goal through questionnaires (Bailey & Cotlar, 1994; Kubota, 1999), but the gain in cultural understanding has not been measured in a precise way. One of the most sophisticated and unique forms of measuring cultural notions held by foreign language students is the web-based cross-cultural project CULTURA, developed at the Massachusetts Institute of Technology by Furstenberg and colleagues (Furstenberg, Levet, English, & Maillet, 2001).

An enlightening example of a study where one of the instructional goals was intercultural learning is given by Kubota (1999). She describes a third year college Japanese class in the United States (anglophone students), which carried out various computer-based projects:

1) journal writing,

2) creating a personal homepage,

3) a Japanese culture project using the WWW, and

4) a collaborative class fiction using a discussion forum on the WWW (Kubota, 1999, p. 205)

The goal of one part of the project (number 3 above) was to develop reading skills through learning about various aspects of Japanese culture and society, using Japanese

websites. The students conducted research on the Internet on a topic of their choice, and then wrote a short paper and gave an oral presentation in class, both in Japanese. Guidelines and expectations were given out to the class, and pairs were formed to work collaboratively. The teacher also suggested several sites for each topic the students had chosen. Kubota subsequently asked the students for feedback on these activities, to be given in the L1 (English). In order to measure the *motivation* of the students, Kubota used a questionnaire which was a modified version of Warschauer's (1996). It contained 15 Likert-scale statements on students' attitudes toward computer technology in general and 25 statements regarding their attitudes and feelings toward using the computer for learning Japanese. This questionnaire was given out before and after the project. In addition, students made written L1 comments about their experience, and the teacher (as researcher) kept observation notes. The result of the questionnaires showed that students had positive attitudes toward using the computer in general for language learning. There was a certain amount of anxiety at the beginning, which decreased during the course of the project. Students reported that their Japanese language proficiency had profited in both reading and writing, and that their motivation was significantly enhanced as a result of the Internet project. The richness of authentic material and cultural information was noted in a very positive way, and a deeper understanding of Japanese culture was expressed. The only negative factor was that the material on the web was too *difficult* to read, and often resulted in frustration. This aspect seems to be the most serious problem when considering pedagogically sound ways of Internet use in the classroom. Chun and Plass (2000) have called attention to the fact that the student has to cope with unknown syntax, vocabulary and unfamiliar text structures at the same time.

As far as the data collection in Kubota's study is concerned, it must be critically noted that we have only the students' general impressions of their enhanced reading and writing, as well as of their gain in motivation and cultural understanding. Further research would have to show in what way specific language skills, e.g. reading comprehension, strategy use, vocabulary and grammar acquisition, development of intrinsic interest in the target culture, etc., would be enhanced. Kubota herself observed that in-depth interviews might have provided richer results than the ones she was able to obtain through the questionnaires. The use of think-alouds in my study addresses this concern.

Sidman-Taveau and Milner-Bolotin (2001) apply the constructivist approach to foreign language learning at the university level. They use the Internet program Web Quest (El Mundo Hispano Web Quest),[7] an integrated program which includes links to authentic websites, instructions, models, strategies, grading criteria, dictionaries, and vocabulary references. In one of the real-life tasks, the students were given a problem scenario in Spanish. They were to shop for clothing for a beach vacation in one of several on-line clothing stores in Spain. Students took notes describing the items they had chosen using an on-line dictionary. Next, they brought their notes to class and worked in pairs to create a dialogue about each other's purchases. Similar activities were carried out with authentic Mexican food menus, and travel information on the web which was used to plan a trip to a Spanish speaking country. The project was carried out with first year Spanish students, and showed positive results in vocabulary gain, understanding of new language structures, and heightening of motivation, as evidenced in student work and the on-line feedback. As in other constructivist learning environments, the main challenges

[7] http://www.utexas.edu/courses/spanish506web/

for the researchers (and teachers) consisted in the formative assessment and the scaffolding. One of the reasons for this difficulty was that the students did their assignments at home, so that the teacher was not present to see what kind of scaffolding they needed. The present study aims at addressing that problem by observing students as they complete the reading tasks.

2.2.3 Difficulty of Internet texts and teacher scaffolding

In all descriptions of Internet use, there is, apart from the enthusiasm for this new technology, a frequent characterization of foreign web pages as overwhelming. In Kubota's (1999) study, the students felt discouraged because of the difficulty of the Japanese texts on the Internet. The difficulty in this specific case was due partly to the large number of unfamiliar *kanji* (characters) encountered in unedited Japanese texts on the Internet, but also to the amount of unknown vocabulary and the extensive use of idioms. Whereas the difficulty comprehending character-based writing systems such as kanji is a problem specific to languages that use a different writing system, the large amount of unknown vocabulary and idioms is a problem that many other researchers mention (see overview in Brandl, 2002).

Indeed, there seems to be a contradiction between the claim of autonomous learning through the use of the Internet and the often-articulated need for teacher guidance. Most authors emphasise that students need the support of the teacher in their attempt to understand foreign language texts and the foreign culture. There are two main reasons for this. On the one hand, the Internet is not edited. Lexical phrases and idiomatic expressions make a text easily accessible for native speakers, since they can use their

knowledge of common word combinations and have less necessity to analyse each linguistic structure (Skehan, 1998a), but they make a text more difficult to comprehend for the language learner with less idiomatic knowledge. While unedited Internet texts provide the opportunity to observe language as it is actually used, the learner is deprived of the support which has been shown by second language acquisition studies to help the acquisition process. The "foreigner talk" type of input modification that native speakers use when communicating with language learners makes the input comprehensible, and comprehensibility is one condition for acquisition to take place (Krashen, 1985; Long, 1981; Long & Portner, 1985). Chun and Plass (2000) talk of the "cognitive overload" (p. 163) that some students experience when confronted with the task of navigating in a hypermedia environment.

The other reason is a psychological one. If we agree with the Vygotskyan view of learning as a process that involves independent problem solving *and* guidance by adults and more mature peers, it is easy to see that the scaffolding by the teacher remains essential. Müller-Hartman (1999) reports on a German-American email project where tasks were too open and noncommittal, and thus led to frustration and loss of interest. Other authors concur with this view. While independent time on the Internet can be a factor in enhancing students' motivation,[8] some of the studies have shown that students feel lost when they are left too much alone with their Internet reading. Guidance is needed, but the role of the teacher changes. He or she no longer "teaches" material which has been chosen and structured beforehand, but guides the students so that they become

[8] Green (1997), e. g., mentions the opportunity for students to spend "unstructured time" on the Internet with different aspects of the foreign culture (p. 258), where they just get immersed in the foreign culture via clicking between different websites.

able to find the material they need in order to complete tasks. The teacher becomes the "facilitator." Brandl (2002) makes a very useful distinction between "teacher-determined," "teacher-facilitated," and "student-determined" modes of project work on the Internet (p. 96).

2.2.4 Implications for the design of this study

As can be seen from the literature discussed above, the new technologies already play a major role in foreign and second language teaching, and can be expected to do so to an even greater extent in the future. What has emerged in all the articles is that these technologies offer new forms of experiential learning, which will have positive repercussions on constructivist learning and teaching. There is a lot of enthusiasm about the possibilities, but often not enough critical distance. Many authors see the wealth of authentic texts on the Web, but are not always aware of the difficulty of unedited texts and the discouragement that time-consuming Internet searches might bring to students. Others see the difficulties and suggest ways of limiting the overwhelming choice of texts and links.

The present study was designed to address these issues by observing closely what students do on the Internet, determining students' strategies as well as the factors which lead to successful or unsuccessful use of the Internet for solving reading tasks. This study follows Kubota's (1999) and Lee's (1997) studies and takes it one step further. Kubota and Lee introduced the Internet as a tool to enhance motivation and as a search tool for cultural information, but they did not observe what the students actually did. Their evaluation of the new technological tool consisted in analyses of questionnaires and

student work. The present study observes the students *while* they are engaged in the Internet tasks and determines which specific factors can be identified that characterize Internet reading, and which factors hinder successful Internet use. While the literature points to many important questions regarding empirical studies of Internet use, the main research focus of the present study is on the reading strategies that students use on the Internet and the difficulties they encounter. The close observation and think-aloud protocols are aimed at tracing the amount, the type and the depth of reading.

The study is also an answer to Warschauer (2000)'s lament that "the great enthusiasm about the potential of computer networks for language learning has not yet been matched by research on what actually occurs in on-line classrooms" (p. 41). Specifically, the following questions are addressed: Which specific reading strategies do students use as they search the Internet? Are there new strategies specific to online reading? In what ways do students "construct" their own texts through clicking through a number of links? Another aspect that has not been observed empirically so far is to determine where students make choices within hypertexts, for what reasons, and how these choices either enable them or prevent them from constructing the knowledge they are seeking.

Furthermore, the study addresses the issues of text difficulty or insufficient familiarity with the target culture. Questions answered by this study include: What exactly constitutes difficulty for the foreign language student? At what point do students encounter and become aware of difficulties, and how do they solve them? The study aims to establish whether the difficulty is a result of too many unknown words, as Bernhard (2003) suggests, unknown grammatical structures, idiomatic expressions, genre characteristics, visual and structural organisation of web pages, or insufficient

background knowledge. The resulting findings help answer the following practice-oriented questions: Which pedagogical scaffolding, especially which types of tasks, can be identified that are most effective in counterbalancing the difficulty of Internet texts?, and How should tasks be formulated and organized to meet the learner's knowledge and prior experience?

Finally, the proficiency level of students is a crucial factor. There are different levels of readiness for this type of constructive hypertext reading. Therefore, I relate the findings of the observations to the proficiency levels of the students.

2.3 Reading research

2.3.1 Theories of reading

For the purpose of this study, I start from the basic definition of reading by Eskey (2002): "Reading is the process of acquiring information from a written or printed text" (p. 5). This definition pertains to non-fictional texts, and covers what students at this level (2nd year foreign language learning) can be expected to do with Internet texts. The students read German literature texts in class as well, but for my study I looked at the information-retrieval aspect of reading only, not at aspects such as aesthetic appreciation of texts.

Early research in L1 reading viewed reading as a purely receptive process, whereby the reader identifies letters, words and sentences, then decodes the author's intended meaning. It was assumed that the reader arrives at the meaning of a text by starting from the smallest textual units (letters and words), and then proceeds to the larger ones (phrases and clauses) and from there to the assignment of meaning. Therefore, the model

was called “bottom-up.” LaBerge and Samuel (1974) extended the model by postulating that the text recognition processes have to become automatic before the reader can attend to the meaning of the text.

Goodman’s (1967) article drastically changed thinking about reading. Investigating the reading process of young readers in their native language, Goodman suggested that reading is not so much precise sequential letter identification, but it is a “psycholinguistic guessing game” (p. 126). His psycholinguistic approach to reading involves sampling from the print material and anticipating that which has not yet been read, forming hypotheses and making predictions about the text on the basis of grammatical and semantic knowledge, then confirming or rejecting hypotheses as new information is processed. This “top-down” model emphasized the importance of the knowledge and experience a reader brings to a text (see also Smith, 1982). Models in which a reader’s knowledge is at the center are also referred to as “reader-based” (Alderson, 2000). Carrell and Eisterhold (1988) relate that the German philosopher Immanuel Kant had already recognized the importance of previous knowledge by claiming that new information and new concepts only have meaning when they can be related to something an individual already knows. At the beginning of the 20th century, Gestalt psychologists introduced the term “schema” to this discussion. They analyzed what kind of elements are involved in our cognitive processes and how these elements are connected in structured schemata. Their main interest was to describe how the individual makes sense of new information, how a person’s knowledge of the world interacts with incoming information, and how new information is added to pre-existing concepts. Cognitive psychology has further developed the concept of schema and explained how mental networks of information are

created by experience, and further developed through each incoming stimulus (Rumelhart, 1980). A schema in cognitive psychology is defined as an abstract knowledge structure; it is composed of "networks of information." Schema theory was subsequently adapted in reading theory to explain how a person's world knowledge is organized and stored in memory in abstract knowledge structures and how these are accessed in order to interpret new incoming information when reading a text (e.g., R. C. Anderson & Pearson, 1988). The reader interprets the new information on the basis of old information, and allows it to become part of the concepts he/she has already stored. In this way, past reactions and past experiences influence what a reader understands and how he/she is able to process a text. If readers can relate what is being said in the text to the previous knowledge they have, they can make effective inferences about the meaning of the text concerned.

Although schema theory has contributed greatly to reading research, critics have pointed out that such top-down models do not define sufficiently what the role of the text is in this process. That is, they do not define how text features and previous knowledge interact. Therefore, recent studies in reading comprehension have asserted that neither bottom-up nor top-down approaches alone adequately characterize the reading process. Rather, this complex process has to be seen as a synthesis of both approaches, and is "interactive" in nature. In a more precise model of reading, Goodman (1988) suggests the following steps for attaining comprehension:

(a) recognition of graphic display,

(b) prediction of text meaning while seeking significance of sensory inputs,

(c) confirmation of these predictions with subsequent input,

(d) correction of wrong predictions,

(e) termination of the reading process when meaning is constructed. (p. 16)

In this interactive model, readers use the text-based approach when they "recognize graphic displays" of the written text and confirm their hypotheses; they use the reader-based approach when they apply their background knowledge, through predicting and correcting. Both processes are necessary and influence each other. The reading process is not linear, going from text-based processes to reader-based ones, but it is seen as cyclical, going back and forth between the two processes as necessary.

The interactive theory of reading, first researched in the context of first language reading, was then applied to foreign language reading (Carrell et al., 1988; Eskey, 2002; Eskey & Grabe, 1988; Grabe, 1991; Shrum & Glisan, 2000; Swaffar et al., 1991). Shrum and Glisan (2000) conclude that "bottom-up and top-down processes are used together in the comprehension task" (p. 124). Swaffar et al. (1991) contend that reading comprehension "results from interactive variables that operate simultaneously rather than sequentially" (p. 21). Their "procedural model" assumes that bottom-up and top-down processes occur simultaneously. According to their model, readers approach texts with some kind of speculation about the contents. The texts focus and guide the readers' expectations and their construction of meaning. Comprehension is considered the "synthesis of text and reader view" and occurs "when these divergences are resolved" (p.74). Eskey (2002) sees reading as a process where the brain "relates the new information taken from the text to the much larger body of knowledge it already has to make sense of – or give meaning to – the text as a whole" (p. 6). Grabe (1991; 2004) adds another dimension to the interactive theory of reading by suggesting that reading consists

of various component *skills*. He shows that a reader uses "lower level" identification skills to recognize words and structures necessary for decoding and simultaneously uses "higher level" interpretive skills to construct the meaning of the passage. Both skills blend into one during the process of creating meaning from a text. As the reader is taking in letters, words, and phrases, he/she creates a meaning representation of the text, which Grabe (2002) calls a "text model of reading comprehension" (p. 25). At the same time, readers start an interpretation of the text, based on their own background knowledge, but also on their own goals, motivations, and attitudes. Thus, comprehension of a text draws on effective strategy use as well as on linguistic knowledge.

With specific reference to L2 reading, Carrell and Eisterhold (1988) use concepts of schema theory and distinguish three types of schemata that the foreign language reader makes use of:

- the reader's prior linguistic knowledge and level of proficiency in the second language *(linguistic schemata*),
- the reader's prior background knowledge of the content area of the text (*content schemata*), and
- the reader's prior knowledge of the rhetorical structure of a text (*formal schemata*) (p. 4)

Proficiency in the second language (*linguistic schemata*) seems to be crucial for comprehending second language texts (Devine, 1988). If there is not a certain level of proficiency, a so-called second language "threshold level," reading strategies which have been acquired for the L1 cannot be transferred (Barnett, 1989; Clarke, 1988; Eskey & Grabe, 1988). Schoonen et al. (1998) investigated whether language proficiency in the L2

or strategies developed for the L1 were more influential in L2 reading comprehension, and in general found that language proficiency in the L2 has a greater impact. Both L1 and L2 reading ability is strongly dependent on vocabulary knowledge, but this is even more the case for L2.

Content schemata in L2 reading refers to cultural knowledge of the target culture. If this background knowledge is lacking, it is difficult to make sense of foreign language texts. Floyd and Carrell (1987) show that background knowledge has a greater effect on comprehension than the linguistic difficulty of a text. In a similar vein, Urquart and Weir (1998) and Alderson (2000) claim that topic familiarity is often more important than the reader's linguistic knowledge. Hammadou (2000) conducted a study with university students with either French or English as their L2 and found that subject knowledge related significantly to reading comprehension. Brantmeier (2005) was able to show the same for American and Costa Rican university level L2 readers. However, background knowledge might become less important as readers develop higher language proficiency (Bernhardt, 1991).

Formal schemata refer to text structures. When readers have knowledge of text structures in the target language, comprehension increases (Carrell, 1992; Chu, Swaffar, & Charney, 2002; Urquhart & Weir, 1998). Waller (1987) emphasizes the importance of cultural knowledge of text features such as typography for readers' expectations and subsequent interpretations of the content of texts.

Comparing all three schemata which are available to the L2 reader, researchers assumed for a long time that skillful readers can make up for limited linguistic knowledge by exploiting relevant schematic and contextual knowledge, but it has now become clear

that this can only be done up to a certain degree. Nassaji (2003) shows in a study on higher-level and lower-level text processing skills in ESL reading that efficient lower-level word recognition processes are essential components in second language reading comprehension and that the role of these text-based processes must not be neglected. Indeed, lower-level or linguistic processes are again seen as a prerequisite for higher level processing. If a text is linguistically too difficult, for example if the vocabulary or grammar is above the reader's ability, higher level processes cannot operate efficiently (Grabe & Stoller, 2002). The consequence for weak readers is either to engage in a slow word-for-word reading, or else use higher level inferencing "wildly" and try to force the text into their expectations.

Apart from these cognitive approaches, newer theories of reading include the social dimension of reading. Purcell-Gates (1997) calls these approaches "balanced theories" (p. 5) since they extend the interactive approach to include the social situatedness of the reading process. Goodman also reformulated his psycholinguistic model to include the influence of social settings and pragmatics on the reading process. As before, the process is described as sampling the text and making predictions, but now Goodman recognizes the importance of the reader's social situation and its influence on what the reader will recognize in a text. For example, readers from different cultural backgrounds will read a text differently than L1 language readers would (Goodman, 1996). Studies by Chun and Plass (2000) have confirmed this postulate. Comprehension, in Goodman's terms, is a 'transaction' between the reader and the text. The meaning of a text is not a feature of the text itself, nor does it solely reside in the reader, but it is constructed as a third entity between the text and the reader. Each reading will bring about a different meaning to the

text (Purcell-Gates, 1997). In a similar vein, Bernhardt (1991) calls her model the "sociocognitive view of reading," since it is based on cognitive learning theory, but takes into consideration the social function of reading. The cultural context of the text and the reader bring about not just one reading of a text, but multiple readings. Therefore, when researching the reading process, one has to give a complete description of the subject group, e.g. native language background, age, educational level, interest, and attitudes (Bernhardt, 1991).

In my research, I combine the interactive model of reading with the *sociocultural* approach, since the reading situation in Internet reading plays a significant role in the reading process. Readers of a foreign language read Internet texts which are typically written for L1 readers, and which have, because of their constant change, updating, and utilitarian function, a very strong relation to the culture of origin. The sociocultural approach to reading also corresponds to the principles of constructivist learning theory. Both theories claim that there is no fixed "meaning" in a text, but that the meaning is ascribed to a text by the construction process of the reader / language user. The concept of *purpose* is essential to both theories: if a text has a real intention and a real message, readers will more easily read it "with a purpose" (Knutson, 1997) and derive from it that meaning which corresponds to their purpose for reading. A sociocultural model of reading stresses the relevance that reading has for the individual reader. A text is read for authentic purposes in a real social setting. Obtaining facts from Internet texts can be seen within this context of situated reading. My research emphasises the sociocultural approach by using sociocultural facts about the readers, obtained through a questionnaire, and relating them to reading outcomes and reading strategies.

2.3.2 Reading strategies

One of the most important topics in L2 reading research is the development of reading strategies which can be seen in the greater context of general learning strategies. Cohen (1998), basing his definitions on O'Malley and Chamot (1990) and Oxford (1990; 1996), defines learning strategies as "those processes which are consciously selected by learners and which may result in action taken to enhance the learning or use of a second or foreign language, through storage, retention, recall, and application of information about that language" (p. 4). As far as the specific language modality of reading is concerned, Cohen's differentiation between strategies for *language learning* and *language use* is relevant. Reading strategies are an instance of *language use strategies*, that is, strategies that the language learner applies after having learned parts of the L2. Language use strategies include *cognitive strategies* (retrieval, comprehension of words), *metacognitive strategies* (pre-assessment, pre-planning, on-line planning, and evaluation), *affective strategies* (regulation of emotions, motivation, attitudes), as well as *social strategies* (interaction with others or with texts) (Cohen, 1998). While Cohen's own research has been concerned mainly with strategies for the productive language modalities of *writing* (Cohen, 1987) and *speaking* (Cohen, 2005), and O'Malley et al. (1985) and Vandergrift (2003) observed strategies in the context of *listening*, there are also a number of studies that are specifically concerned with *reading* (N. J. Anderson, 1991; Carrell et al., 1989; Kern, 1989; Ko, 2005). A seminal reading study, also with respect to data collection techniques, is Hosenfeld's (1984) study of ninth grade ESL readers. She started by identifying strategies of "good" and "poor" readers. Hosenfeld

reports on three case studies which she conducted in an American ninth grade class learning Spanish as a foreign language. She used the think-aloud technique in order to discover the reading strategies of the students. In the first study, Hosenfeld attempted to identify reading strategies of "successful readers." She asked high and low scorers on a test of reading proficiency to self-report as they read a new text. High scorers tended to "keep the meaning of the passage in mind, read in broad phrases, skip nonessential words, guess from context the meaning of unknown words and have a good self-concept as a reader" (p. 122). These good readers take more risks when they read, rely on their background knowledge more and form hypotheses about the contents of a text. Low scorers tend to lose the meaning of sentences as soon as they decode them, read word-by-word, rarely skip words, and turn to the glossary for the meaning of unknown words. Hosenfeld's conclusion from her studies is that teachers should teach efficient reading strategies explicitly to language students, such as guessing the meaning of unknown words, using contextual information, illustrations, and consciously tapping their own background knowledge.

For my research purposes Hosenfeld's (1981) list of (successful) reading strategies is a good starting point to observe and identify students' reading processes:

1. Keep the meaning of a passage in mind while reading and use it to predict the meaning.
2. Skip unknown words and guess their meaning from context
3. Use context in preceding and succeeding sentences and paragraphs
4. Identify the grammatical function of an unfamiliar word before guessing its meaning.

5. Evaluate guesses
6. Read titles and make inferences
7. Continue reading if unsuccessful
8. Recognize cognates
9. Use knowledge of the world
10. Analyze unknown words
11. Read as though reader expects the text to make sense
12. Read to identify meaning rather than words
13. Take chances in order to identify meaning
14. Examine the illustration and use information contained in it in decoding
15. Use side-gloss
16. Use glossary as last resort
17. Look up words correctly
18. Skip unnecessary words
19. Follow through with proposed solutions
20. Use a variety of types of context clues (p. 149)

As can be seen, these strategies include both bottom-up (3, 4, 15, 16, 17) and top-down processes (1, 5, 8, 9, 11, 12, 13, 14, 19), with a more pronounced focus on top-down strategies. This is probably due to the time in which the study was made, and the prevalence of the top-down approach during the 1980s. Some authors have criticized the list of strategies of the "good" vs. "poor" reader as simplistic (Parks & Raymond, 2004). They found that strategies have to be seen as a complex, socially situated phenomenon. Second Language Acquisition studies have tried to explain strategy use with respect to

different learner characteristics, such as motivation, age, gender, or cognitive style (Oxford & Nyikos, 1989), but have usually not taken into account the social context of the reading activity. For example, the subjective perception of the goal of the activity might play a decisive role in strategy use, as well as the personal history of learners and their specific interest in learning the language (Norton, 1997, 2000).

A very significant study in L2 (ESL) reading strategies is N. J. Anderson (1991). He asked whether there were differences in individual strategy use, observed in two different contexts of reading: taking a reading comprehension test and reading academic texts. He also wanted to find out whether there were any strategies that generally lead to better text comprehension. Anderson investigated groups of high, intermediate, and low level ESL readers. Their L1 was Spanish. Just as Hosenfeld, Anderson used the think-aloud method to observe the students' reading strategies, extending Hosenfeld's list to 47 strategies, eighteen of which pertained to test-taking. Anderson found that language proficiency levels accounted for most of the differences in test scores, more than the use of strategies did. However, language proficiency was less significant for the comprehension of academic texts, where reading strategies and learning styles were more significant factors. Here, the intensity of strategy use contributed to better text comprehension. Furthermore, Anderson found that stronger students used significantly more strategies in their reading, but that they did not use a higher number of different strategies. In fact, students used similar types of strategies across proficiency levels and also across the two tasks. The difference between successful and less successful readers could be attributed more to *how well* they used the strategies. Anderson observed that if the language foundation is not sufficient, strategies may be known to students, but not applied

successfully. As Anderson's study is relevant to my research questions, I include some of his strategies in my own list, for example *predicting text content*, *skipping unknown words*, *expressing need for a dictionary*, *using cognates* to understand texts, *translating* words or phrases, *breaking lexical items into parts*, *rereading*, and *relating text to personal experiences.*

Other studies have likewise elaborated Hosenfeld's list. Grabe and Stoller (2002) have added *specifying a purpose for reading*, *paying attention to text structure*, *summarizing information*, and other discourse-related strategies. Consequently, I have incorporated strategies from Hosenfeld, N. J. Anderson and Grabe and Stoller into my research design (see Chapter 3, Methodology).

2.3.3 Implications for the design of this study

In my study I investigate whether reading on the Internet is characterized by specific Internet reading strategies, dependent on the specific interaction between a human and a machine, and between the L1 speaker and highly culture-specific L2 texts.

On the basis of research on reading strategies used with printed material, I explore whether these strategies are transferred to Internet reading. It was to be expected that guessing the meaning of words from the context, using word formation regularities, recognizing text structures, forming hypotheses about the contents of a text, or using visual clues in order to interpret the meaning of a text are used on the Internet as well. But are there new strategies? What role does familiarity with websites in general play? In what way will the possibility of abandoning a text and "clicking" to a new text change reading behaviour? Will an unproductive strategy like word-for-word reading be used on

the Internet as well, and what effect does that have? What effect does computer literacy have? These considerations were made on the basis of observing and describing which reading strategies students use and what difficulties they encounter as they try to comprehend the texts and complete the reading tasks.

Also in accordance with reading research, the reading topics were selected in such a way that they ensured utmost interest and relevance to the students. A questionnaire where students were asked about their topics of interest provided information about relevant topics. Furthermore, sufficient background knowledge about the topics in the reading texts was ensured by offering a range of only those topics which had been discussed in class previously, basically the topics of their textbook *Kaleidoskop* (Moeller, Adolph, Mabee, & Berger, 2002). This ensured a minimum of vocabulary and grammar coverage. For each reading task the students had a choice of texts, as offered within the pre-selected websites. This possibility of choice promoted more relevance and purpose to their reading.

Chapter 3: Methodology

In this chapter, I present my research questions (3.1), explain my decision for a case study research design (3.2), and describe the research situation (3.3), the research procedures (3.4), the data collection instruments (3.5), and approaches to analysis (3.6).

3.1 Research questions

On the basis of my research interest and the findings in the literature about foreign language Internet reading, I now formulate my research questions more precisely:

1. Which (successful and unsuccessful) strategies do students use as they try to complete different types of tasks that involve reading on the Internet? Are there strategies that are specific to Internet reading?
2. What are the specific difficulties that foreign language students encounter when they use the Internet to engage in and complete reading tasks? Are the difficulties due to undeveloped linguistic, content or formal schemata?
3. Do students characterized by higher course performance and students characterized by lower course performance show differences with respect to reading strategies on the Internet, difficulties encountered, and task outcomes?
4. Which Internet tasks are most productive in terms of the instructional purpose, i.e., productively use the Internet for foreign language teaching? For example, which types of reading are best suited for Internet text comprehension and lead to better task solution: scanning, skimming, reading for detail, or linguistic noticing tasks?

3.2 Qualitative multiple-case study

In order to make a decision about the most fitting research methodology for a given study, the researcher has to be clear about the underlying theoretical stance that guides the research. As Creswell (2003) claims, all research is driven by basic philosophical assumptions about the nature of reality (ontology) and the nature of attaining knowledge (epistemology). These philosophical assumptions have also been referred to as "paradigms" reflecting the fact that a change in basic philosophy changes the direction and methods of research (Lincoln & Guba, 2000). My underlying epistemology is constructivism. Constructivist philosophy claims that there are multiple realities, depending on the meanings that participants construct in social interaction. The goal of scientific research within this framework is to reach a deeper understanding of the world in which we live and of social and psychological processes, taking the context and the participants' views of the situation into account as much as possible (Gergen & Gergen, 2000). This goes back to Vygotsky whose scientific method was a way of understanding, rather than predicting, mental functioning (Vygotsky, 1981). The goal is not to verify a theory, but to generate new patterns of meaning. It is an interpretive way of attaining knowledge (Crotty, 1998). In the social sciences, this philosophy is often associated with a *qualitative approach* (Creswell, 2003; Denzin & Lincoln, 2000, 2005). Its purpose is to understand a situation through naturalistic investigation of people or processes in the contexts in which they occur. In *The Handbook of Qualitative Research* Denzin and Lincoln (2000) give the following definition: "Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible ... qualitative research involves an interpretive, naturalistic

approach to the world..." (pp. 3-4). The goal is to comprehend the meaning of human actions and human cognitive processes (Wallen & Fraenkel, 2001), including human intentions, goals and purposes (Fang, 1995). Pavlenko and Lantolf (2000) explain the need for such an approach: "the logico-scientific mode of conducting research requires a complementary mode – a mode that searches for *reasons* rather than *causes*" (p. 218). Tesch (1990) gives as examples Sigmund Freud and Jean Piaget, who did not test large representative groups of people but rather asked individual people questions and observed them intensively. They then tried to make sense of what they saw in order to find plausible explanations.

My research interest of gaining an understanding of the Internet reading process motivated my decision to choose a qualitative research design. I wanted to examine reading strategies as they occur in a naturalistic setting, namely the foreign language classroom. Furthermore, I wanted to give students the opportunity to express their own thoughts about this process. This view from the inside (the emic perspective) of the learners' experience as well as the interpretative nature of the study is associated with a qualitative research approach.

In order to determine the specific research design, I followed Creswell (1998; 2003) who names five "strategies of inquiry" within the qualitative approach: *Ethnographies, grounded theory, phenomenological research, narrative research, and case studies*. I chose the case study which is the ideal research strategy for my purpose, since I investigate a complex process bounded by time and activity. In my research, the specific educational activity is the reading of foreign language texts on the Internet; and I did this in the time span of four reading sessions with nine participants, observing them as they

completed tasks which present typical activities in their classroom situation. The advantages of case studies lie in their ability to provide a multifaceted picture of a case. They go beyond the statistical relationship between a limited number of selected variables. As Duff (2008) argues, case studies "have a high degree of completeness, depth of analysis, and readability" (p. 43). Furthermore, since they concentrate on one individual or a small number of individuals, "it is possible to conduct a very thorough analysis of the case" (p. 43). Insights yielded by case studies can be put to immediate pedagogical or political use (Lincoln & Guba, 2002).

The major disadvantages of case studies (and of qualitative research in general) are that their findings cannot be easily *generalized* to other cases, and that single studies may lack *representativeness* (Duff, 2006; Holliday, 2002). Representativeness can be achieved through careful selection of (several) typical cases. Wallen (2001) speaks of "purposive sampling." In my study, 10 out of 12 fourth-semester German students volunteered for and participated in the study (later on, one of the participants' data could not be used, see below). This means that the sample is a good representation of the studied class. Furthermore, the class followed a syllabus based on the four language skills (listening, speaking, reading, writing), and used a commonly accepted German college textbook for second year university German classes, *Kaleidospkop* (Moeller et al., 2002). This textbook is in its coverage of topics and language structures comparable to other commonly used intermediate level university textbooks. The reading passages in the book have been described by the authors as ranging "from approximately an intermediate-low on the ACTFL scale to advanced" (Moeller et al., 2002, p. IAE 28). Therefore, the class can be considered as typical of many second-year American university classes.

Generalizability can be increased by the comparison of several case studies. In my study, nine students are compared to each other with respect to their use of reading strategies. Although generalization to the population of second-year American students of German cannot be achieved with a small sample like this, my observations allow me to generalize to the types of reading strategies that reading task such as used in the study might involve. This study can be seen as an example of an "instrumental case study" (Stake, 2005), which aims at facilitating our understanding of an issue, the issue here being reading strategies on the Internet.

I furthermore aimed at the *transferability* or *comparability* of the case by describing the pedagogical context and personal factors of the students. Information about the students was obtained through questionnaires and their teacher's evaluation of their performance in the course, which was primarily based on her assessment of their language proficiency. The detailed description of the teaching situation and students' characteristics enables readers to compare the instructional context, cases and strategies to their own and to consider the transferability of findings to their situation. At the same time, information about the students led to a deeper understanding of the cases and allowed me to relate the students' strategy use to personal variables such as motivation, special interests, or computer skills.

One way of strengthening the *internal validity* or credibility of case studies is by the *triangulation*[9] of data. It helps correct for observer bias, and enhances the development of valid constructs during the examination of the collected data (Duff, 2006, 2008). In order to triangulate data, I combine several types of data collection: an initial

[9] *Triangulation* is the attempt to arrive at the same interpretation by at least three different independent procedures.

questionnaire, think-aloud sessions with students while they were engaged in the reading tasks, concurrent observation of student activity on the Internet, semi-structured interviews with the same students shortly after the reading sessions, and an evaluation of their written answers to the reading tasks. These elicitation techniques were designed to obtain in-depth data of different instances of the reading process so that a detailed description was achieved and valid statements about the typical factors involved in reading on the Internet could be attained.

3.3 Research situation

3.3.1 Learning context

The study was carried out in an intermediate German course at a North American university. The class was studying German in their fourth semester and consisted of 12 students, seven female and five male. The textbook used in the class was *Kaleidoskop* (Moeller et al., 2002), which has texts on the following topics: Leisure time, communication, Germany in the 21st century, family, music, work, multicultural society, young and old people, stereotypes, and environment. The topics for the reading tasks were selected from this list, and determined partially through students' preferences as expressed through the initial questionnaire (see below). The textbook introduces basic reading strategies such as guessing the meaning of unknown words, scanning texts for specific information, and skimming texts for overall topics and themes. Content-based comprehension questions required detailed reading of some of the texts, and advance organizers introduce students to the strategy of tapping one's knowledge to make sense of a new text. Thus, the students were familiar with basic reading strategies.

The Internet readings in the study had the function of consolidating previously acquired language skills in the areas of lexical and grammar knowledge, while students try to understand new authentic texts. The value of using authentic texts for the development and extension of language ability has been reported in the literature (Devitt, 1997; Mazza, 2000; Omaggio-Hadley, 2001; Swaffar, 1985). The Internet was not used here as a tool to *teach* the language (as is done in online instructional programs or in computer-mediated communication) but to *apply* reading skills. The Internet texts were intended to help students construct a more meaningful understanding of the German culture and of German language features (see similar distinction in the overview article by Chun, 2007).

3.3.2 Participants

Participation in this study was voluntary. Every student in the class was invited to take part in the Internet reading sessions and observations. The teacher of the class offered extra credit for participation in the study. Students who decided not to participate were offered other means of obtaining extra credit, for example by reading texts in printed material and reporting on them. Ten of the 12 students in the class volunteered to participate. All 10 volunteers were accepted for the study, since this was an exploratory study, and I was interested in gathering as much information about different uses of reading strategies as possible. A larger sample also helps not to "prematurely rule out particular variables or factors" (Duff, 2008, p. 119). I was furthermore interested in comparing the reading strategies of students at different levels of language proficiency, therefore I had to establish proficiency levels within the group. ACTFL (American

Council on the Teaching of Foreign Languages) only has proficiency tests for oral and written production (Oral Proficiency Interviews and Writing Proficiency Test (https://www.languagetesting.com/acad_opi.htm), and a comparable German proficiency test which includes the four skills, the *Zertifikat Deutsch* (Goethe-Institut, EDK, ÖSD, & WBT, 1999), takes six hours to complete. I did not want to request the participants to dedicate a further six hours to the study, in addition to the five hours of think-aloud sessions and interview. Since I needed only an assessment of their relative proficiency in language skills in order to group them into general ability groupings, and my study did not entail any measure of German language output, I decided to rely on the teacher's assessment of the German ability of her students. After the think-aloud sessions were completed, I asked the teacher, an experienced German professor, for her assessment of the students' proficiency levels. She consulted her notes about students' tests during the semester, about their written homework and their oral performance in class, and rated the students on a scale from "1" to "3", where "1" indicated a higher level of German ability, "2" a medium level, and "3" a lower level of ability, relative to this group of students. She gave me two ratings, one of general ability in German (including the four skills), the other one of reading comprehension.[10] It is to be noted that this rating is "informal" in that it was not based on a standardized proficiency test, and therefore the assessed levels cannot be considered technically valid measures of language proficiency. However, the present study is exploratory, and this informal classification of course performance by the teacher provides a means to investigate whether higher performance students use the same strategies as lower performance students. In further research on reading strategy use

[10] The teacher did not rate the students' use of reading strategies, but rather how much the students understood of the texts they read in class.

in relation to level of proficiency, one should apply standardized proficiency tests administered to students from different classes would be a more valid measure to obtain and compare groups of high, medium and low proficiency levels in their use of reading strategies. These results could then also be compared across studies. In the present study, I define proficiency as performance in the German classroom as evaluated by the teacher.

The ratings by the teacher allowed me to group the nine students into three levels: higher, medium, and lower level of performance in German (see Table 1).

In order to maintain students' anonymity, they were given alphabetized pseudonyms.

Table 1: Participants in the study in groups of course performance in German

Pseudonym	General level of performance 1 = higher 2 = medium 3 = lower	Level of reading comprehension 1 = higher 2 = medium 3 = lower	Gender m=male f=female
Andy	1	1	m
Bernhard	1	1	m
Chris	1	1	m
Doris	1 – 2	2	f
Ellen	1 – 2	2	f
Franka	1 – 2	2	f
Gail	2 – 3	3	f
Helen	2 – 3	3	f
Ian	3	3	m

The tenth volunteer was excluded from the sample as she was an ESL student (L1 Spanish). I wanted to maintain comparability by accepting only students with the same L1. Furthermore, since the questions on the task sheet were in English, and the answers were to be given in English (as the students' L1), the ESL student might have a disadvantage, and reading comprehension reported in her L2 (English) not as reliable as if given in the student's L1. As for gender, all three high performance students were coincidentally male, and all intermediate students were female, which makes inferencing

about the relation between gender and reading strategies impossible, and, in any case, gender was not a variable that I set out to explore in this study.

3.3.3 Reading tasks

I developed reading tasks based on Internet search tasks suggested on the textbook's website (college.hmco.com/languages/german/moeller/kaleidoskop) and edited them to make them more consistent with the constructivist approach to reading. Reading in this approach is seen as a communicative activity where the reader interacts with authentic texts as part of a specific sociocultural situation, and with a specific purpose of reading. According to constructivist pedagogy, reading tasks should be authentic by being relevant to life. Following this principle, I included one section in each task sheet where the students were asked to pose their own questions about the topic, and answer them by searching the websites.

The German websites used in the tasks were pre-selected by me, ensuring they were of good quality, current, a valid representation of (broadly defined) German culture, and had attractive graphics, thus meeting recommendations in pedagogical literature on Internet reading (Carrier, 1997; Kubota, 1999; Lee, 1997). While I selected the websites for the tasks, the students were free to click from these websites to links leading to subordinated pages or even to go to outside websites. This satisfied the call for choice and self-determination.

There are four different types of tasks, each corresponding to different reading styles and reading purposes: (a) Internet search for specific information (scanning)[11], (b) gathering information leading to a summary (skimming),[12] (c) comparison of two culturally different texts (detailed reading),[13] and (d) analyzing an online translation of a text in order to analyze this translation linguistically.[14] The pilot task given to the students a week before the study started had the function of familiarizing them with German websites, with the type of tasks and with the think-aloud procedure, as well as establishing whether the task format was adequate for a 50-minute time frame.

For the *scanning task* (Task 1), students were requested to visit a tourism website and look for specific information in order to plan a trip to two German cities.

For the *skimming task* (Task 2), students were requested to visit a music website, choose a musician and skim the biography of this person for global themes and events, then write a summary of their findings.

For the *detailed reading task* (Task 3), students were asked to read a German newspaper article of their choice on the German newspaper website *Deutsche Welle*, and compare it to a North American (English language) newspaper article on the same topic. The task required them to summarize both texts and to compare them with respect to their

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[11] A reader *scans* a text for information when he/she has specific questions about a topic. This might be the reading purpose for a traveler to a foreign country.

[12] A reader *skims* a text to get main ideas. This can be important when we need to get a quick overview of a topic, such as a newspaper article or an article in an encyclopedia.

[13] *Detailed reading* is a close reading. This reading style is used when we need to understand most details of a text, for example when we read a contract, or when we want to compare different texts, as in analyses of literature.

[14] Reading in order *to make linguistic observations* is a style of reading that involves learning through reading. The Internet offers many exciting authentic texts to make these otherwise abstract linguistic observations.

content and the authors' perspective. Newspaper articles belong to a genre that every reader has a basic familiarity with, and is therefore appropriate to use for detailed L2 reading (Mazza, 2000). The topical structure, function of titles and subtitles, and different sections are features that students know from their L1 reading, and this familiarity makes comprehension easier. Furthermore, the students often already know the contents of a newspaper article from their own newspaper reading or they could read the English text first and use that as an *advance organizer* (Ausubel, 1963). This task meets the goal of evaluating critically what the Internet has to offer (Warschauer, 2002) by having students compare two articles from different cultural backgrounds.

For the *linguistic task* (Task 4), students chose a short German text from a website of their choice and translated a paragraph of this text, first by themselves and then with one of three recommended online translation services: babelfish, freetranslation, and translation2.paralink.[15] Subsequently, they were to observe where the online translation did not result in a meaningful text, and explain this phenomenon with linguistic evidence.

Tasks 1 to 3 were integrated into the class syllabus in such a way that they represented a deeper exploration of topics discussed earlier in the semester. In this way, students were able to activate previous knowledge of the topics. They were furthermore able to follow up their Internet search by using the information as preparation for an oral report that they had to give at the end of the semester. These related activities made the Internet reading tasks more meaningful and provided an authentic reading purpose. They furthermore followed the pedagogical axiom that reading activities should lead to some *product* (Carrier, 1997; Skehan, 1998a; Swain, 1985). Task 4, the linguistic task, was

[15] http://babelfish.altavista.com/babelfish/tr, http://ets.freetranslation.com/, http://translation2.paralink.com/

added in order to raise consciousness of German language structures in comparison to English ones (Nunan, 2004). The task is based on research findings that show that awareness of linguistic elements makes *intake* and therefore language learning more likely (Fotos & Ellis, 1991; Schmidt, 1990; Schmidt & Frota, 1986; VanPatten, 1996). That is, if we want our students to make gains in interlanguage development through reading, awareness of linguistic structures must take place. In this sense, the linguistic task has the pedagogical function of consolidating structures previously introduced by foregrounding them. Mazza (2000) shows how students who "learn while they are reading", that is, who try to find out linguistic phenomena while they are reading an L2 text, start to look at texts with a new perspective. An Internet text will have all the linguistic phenomena and regularities of language as it is really used, and thus be a good basis to observe linguistic structures.

Since one of my research questions pertains to the difficulty of reading on the Internet, I analyzed the difficulty of the tasks themselves, using Skehan's (1998b) categories for analyzing task difficulty: Code complexity, cognitive complexity, and communicative stress (see Table 2). *Code complexity* refers to the complexity of the language necessary for the task, in terms of grammatical structures and vocabulary load. *Cognitive complexity* refers to the thinking required for the task and includes aspects such as familiarity with the topic, familiarity of the genre, or familiarity with the type of task. This category also refers to the information organization in the task and the clarity and sufficiency of the information given. *Communicative stress* refers to performance conditions such as time limits and time pressure, to the type of response that is required, and to opportunities to control the interaction. All three distinctions are of relevance in

Internet reading tasks, and I have used Skehan's distinctions to determine the approximate difficulty of the four reading tasks.

Table 2: Difficulty of tasks

	Task 1	Task 2	Task 3	Task 4
Reading type	Scanning	Skimming	Detailed reading	Observe linguistic features
Activity	Plan trip to Germany	Summary of musician's biography	Compare newspaper articles	Analyze online translations
Code complexity (= language required) - linguistic complexity and variety, vocabulary load and variety, redundancy and density	tourism vocabulary, simple sentence structures	music vocabulary, simple sentence structures	political, social text, complex sentence structures	open (chosen by students), e.g. from sports website
Cognitive complexity (= thinking required) **Cognitive familiarity** - familiarity of topic/predictability - familiarity of discourse genre - familiarity of task **Cognitive processing** - information organization - amount of 'computation' - clarity and sufficiency of information given - information type	 yes yes yes familiar text type low: only keywords clear concrete	 yes yes yes familiar text type low +: summary clear concrete	 medium low none complex type/struct. high: comparing texts inferences necessary concrete + abstract	 open open none depending on chosen text high: translate detailed understanding necessary concrete
Communicative stress (=performance conditions) - time limits and time pressure - speed of presentation - number of participants - length of texts used - type of response	 low low 1 short short	 low low 1 medium summary, comment	 low low 1 long evaluation (contents)	 low low 1 short evaluation (linguistic)

Model adapted from Skehan (1998b, p. 99)

On the basis of these distinctions, I conclude that the first task (scanning) is a comparatively easy task since only lexical elements have to be identified, the second (skimming) is more complex in that it requires syntactic processing and is therefore more difficult, and the third task (comparing two newspaper texts) is quite difficult, due to the

higher language register of the texts as well as to the higher-level mental processing required in an evaluation task. It was not possible to judge the difficulty of the fourth task, since students were able to choose their own texts. However, the focus on linguistic structures makes the task more difficult for certain learner types.

In my study I used open-ended questions as the most authentic form of reacting to Internet texts. The questions determined the purpose in reading. The students' L1 (English) was used for the task descriptions as well as for the students' responses, as open-ended questions in the L2 might have led students to take phrases verbatim from the text or might be construed as a test of the productive knowledge of students (Cohen, 1998). When students answer in their L1, it is easier to see what they have understood from the text.

3.4 Procedures

The study was carried out over two semesters. During the first semester, when I was an observer in the class, I conducted an introductory Internet session with the entire class in the language laboratory, where a reading task similar to the ones to be used in the study was carried out. The think-aloud method was explained, which interested students could experience in pilot sessions. During the second semester, I repeated the Internet session with the entire class, as well as conducted pilot sessions with those students who had not done them in the first semester. Towards the end of the second semester, I handed out the description of my study. A schedule was developed for the think-aloud sessions and the interview. Finally, over a four week period, five individual sessions with each student were carried out, usually on consecutive days. Students worked on four

different reading task sheets, which were handed out in random order so that the learning effect from one task to the other was distributed randomly. Following these sessions, each student participated in a semi-structured interview.

While doing the think-alouds, I sat next to the student as a participant-observer. I prompted the students when they forgot to verbalize what they were doing ("What are you doing now?" "Where did you find that information?"). I also answered vocabulary questions, thus replacing the dictionary, but also trying to replicate a real-life situation where the teacher is usually available for questions. Contrary to what I had expected before starting the think-alouds, I became more involved in the process. For example, the protocols show a strong use of my responses of encouragement, such as acknowledging a student's remark or verifying questions. I explained an unknown word or gave the English translation of it whenever the students asked for it. I had originally thought that this procedure was simply a substitute for the students' looking up the word in the dictionary and as a time-saving measure. However, I became aware that the students asked me more words than they probably would have looked up in a dictionary. It was convenient for them to have a native speaker next to them. It is possible that they would not have looked up these words had I not been there, and that might have changed their reading and understanding of the text in that respect. Nevertheless, all students received the same support from me, so the think-alouds are still a valid presentation of what students do while reading on the Internet, when the teacher (and often a teaching assistant) is present in the language lab and available for questions. Although in a normal classroom situation, the teacher could not devote so much time to each individual, the

protocols still show the students' problem-solving strategies and at the same time the points where they needed help from the teacher.

All think-aloud and interview tapes were transcribed and coded for strategies and difficulties (see Section 3.6, Data analysis).

3.5 Data collection instruments

The data collection instruments described here include the initial questionnaire (3.5.1), think-aloud protocols (3.5.2), observations (3.5.3), semi-structured interviews (3.5.4), and assessment of reading tasks (3.5.5).

3.5.1 Initial questionnaire

A questionnaire was developed (see Appendix 1), in order to find out about students' individual characteristics such as reading habits, reading interests, motivation for learning German, and their study major. The questions about their interest in German culture and language were intended to provide me with information about topics to include in the reading tasks. I also asked them about their use of the Internet in their first language (English) and their computer literacy. While computer literacy has been a problem in earlier Internet studies, where students complained about the difficulty of finding their way on the Internet (Lee, 1997), current student populations are more Internet competent and do not need specific training in Internet searches. The last question in the questionnaire asked students about their experiences with the think-aloud technique, and the expectations they had with respect to this procedure, since this might have an effect on their performance (Cavalcanti, 1987). The information about each individual

participant was related to the other findings of the study, and used to interpret individual reading strategies.

3.5.2 Think-aloud protocols

Concurrent think-aloud protocols were collected as the students were verbalizing what they were thinking and doing during the tasks. These protocols constitute the core data of the research. Research carried out using verbal reports focuses on the *process* of language use instead of on the *product*. Studies involving verbal data protocols have been carried out for listening comprehension (N. J. Anderson & Vandergrift, 1996; Vandergrift, 1992), speaking (Cohen & Olshtain, 1993), writing (Cohen, 1991), and teacher training (Johnson, 1992). Reading was originally thought of as an "internal and unobservable process" (Cohen, 1998, p. 177), but as new verbal report methods are improving, research into reading strategies has also been carried out (N. J. Anderson, 1999; Cohen, 1987; Hosenfeld, 1984; Kern, 1994; Pressley & Afflerbach, 1995; Wesche & Paribakht, 1998).

Cohen (1998) distinguishes three different types of verbal reports:

Self-report: learners' descriptions of what they do, characterized by generalized statements about learning behaviour;

Self-observation: the inspection of specific, not generalized, language behaviour, either introspectively, i.e. within 20 seconds of the mental event, or retrospectively; and

Self-revelation: stream-of-consciousness disclosure of thought processes while the information is being attended to. (p. 34)

Think-alouds fall into the category of self-revelation. The language learners verbalize their thoughts *while* they are carrying out an activity. "This process of individuals' observing and reflecting on their thoughts, feelings, motives, reasoning processes, and mental states is one of very few data collection methods available for going beyond observable behaviour and attempting to access the underlying mental processes that determine that behaviour" (Wesche & Paribakht, 2000, p. 199). Other authors have seen this method more critically and have argued that think-alouds do not provide direct observation of thinking processes (Donato & Lantolf, 1990). It is an assumption that the verbal report data reflect a sequence of thoughts, and that these thoughts reflect underlying cognitive processes. Thought is transformed as it is expressed (Lantolf & Thorne, 2006). A methodological limitation of think-alouds is furthermore that students may not have access to these processes. One cannot be certain that the participants are able to observe and report their mental processes accurately. Additionally, the presence of the researcher might affect the students' responses, causing them to respond differently from how they might have without the researcher present. To counterbalance these limitations, triangulation of data is mandatory. Data obtained through other instruments (in the present study: questionnaire, observation, response sheet, interview) strengthen the data obtained through think-alouds. If these conditions are met, a verbal report is a valuable technique for process-oriented data-collection, and provides insight into students' mental processes that are otherwise not obtainable (Vandergrift, 1992).

I use the think-aloud technique as one of my elicitation methods because it gives me the most detailed and in-depth look at students' reading strategies. Other forms of verbal reports, like retrospective accounts and stimulated recall, involve retrospection by the

participants, and the time elapsed between the actual event and the reporting may distort the accuracy of the report (Gass, 2001). The think-aloud technique, on the other hand, allows me as the researcher to be present during the reading process and to take notes of any significant observations, thus strengthening the data obtained from the students. Furthermore, by being present while the students performed their reading tasks, I was able to prompt the think-aloud process through careful questioning.

The reading strategies used for coding the protocols were taken from Hosenfeld (1984), N. J. Anderson (1991), and Grabe and Stoller (2002). Some of their strategies were not used because they are either very difficult to observe or are not applicable to the present research situation. For example Hosenfeld's strategy *follow through with proposed solution* could not be used because it was not always obvious what the students' proposed solution was. They did not usually verbalize their plans. Grabe and Stoller (2002) mention as part of their 22 strategies *posing questions about the text* and *finding answers to posed questions* (p. 211). These strategies are required as part of the tasks in the worksheets: they are "task-dependent" (Würffel 2006) and cannot be counted as strategies initiated by the students. Furthermore, there were some strategy labels which I used at the beginning, but which turned out to be less helpful and were discarded during the coding process. For example, *using titles to construct the meaning of the text* was omitted, as titles are read on a website when orienting oneself on the site. It is not a specific reading strategy that would be explicitly mentioned by the reader. Hosenfeld (1984) also mentions *keep the meaning of a passage in mind while reading and use it to predict the meaning* (p. 419). This strategy is difficult to observe, as it only becomes apparent when it is <u>not</u> used. Therefore, I annotated this strategy (or the lack of it) as part

of the “Difficulties” on the observation sheet. Of Anderson’s 47 strategies, 18 pertained to test taking, and were not relevant for my study.

Finally, specific Internet strategies emerged during the observations, for example *scrolling*, *clicking to other links* or *going back and forth on website* in order to orient oneself on the webpage and structure the reading process. Most Internet strategies can be counted as supporting strategies, when they refer to computer skills, or metacognitive strategies, when they involve decisions about what to read, and at what moment. Interestingly, a third category emerged during the coding, namely strategies that were used to cope with the huge amount of information on the website. I call these strategies “relief strategies” and describe their use in Chapter 4.

Table 3 (next two pages) shows the final list of strategies used in the codings, together with a description of what they entail. Those strategies that emerged during the coding process have an asterisk.

Table 3: Taxonomy of reading strategies

Text-based strategies	***Description***
Spelling	*Student uses spelling of German words, especially capitalization, in order to interpret meaning*
Cognates	*Student guesses meaning of cognate*
*Word formation	*Student uses rules of word formation (compounds, prefixes, suffixes) to guess unknown word*
Grammar	*Student uses knowledge of grammar in order to guess the meaning of an unknown word or of the sentence*
Translation	*Student translates sentence(s)*
*Word-for-word reading	*Student reads the text in a linear fashion, trying to understand each word (not necessarily reading aloud)*
Reader-based strategies	
Predicting contents of text	*Student anticipates what is to come in the text, on the basis of the title, illustration, 1st paragraph, etc.*
Scanning	*Student uses reading style of scanning to look for specific information / words*
Skimming	*Student uses reading style of skimming to get an overview of the topic*
Guessing unknown words	*Student uses the context to guess the meaning of an unknown word*
Using text structure	*Student uses knowledge of text structure, e.g. discourse markers, to construct meaning of the text*
Using illustrations	*Student makes use of the illustrations to guess the meaning of unknown words or of text passages*
Connecting text to background knowledge	*Student uses his/her background knowledge to deduce meaning of unknown words or text passages*
*Relating to personal experience	*Student relates new information to personal experienc*
Making inferences	*Student infers meaning of the text by using context an background knowledge*
Summarizing information	*Student summarizes information of text read so far, usually "getting the gist" of text.*
Metacognitive strategies	
Previewing text	*Student gets an overview of the text before reading in detail*
Continuing to read	*Student continues to read although he/she does not understand all the text*
Skipping	*Student skips words or text passages in order to continue reading and understanding the whole text*
Evaluating guessed words	*Student evaluates if an unknown word that he/she has guessed is appropriate / important in context of text*
*Evaluating contents	*Student evaluates the content of the text he/she is reading (personal opinion)*
*Comparing L1 and L2 / C1 and C2	*Student compares first and second language and culture*
Monitoring	*Student monitors his/her own reading and evaluates what he/she is doing (=awareness of strategies)*
Rereading	*Student refers back to text above in order to understand text which follows or rereads text in order to answer questions.*
Repair	*Student corrects a mistake he/she has made when interpreting the text (self-initiated)*

*Focusing on task	*Student focuses on task at hand, usually to confirm comprehension of task, or to finish promptly.*
Supporting strategies	
*Asking about unknown word	*Student asks the meaning of an unknown word (researcher assumes role of dictionary)*
*Asking for detail of German culture	*Student asks for some detail of German culture in order to make sense of text*
*Reading aloud	*Student reads the L2 text aloud*
*Subvocalizing	*Student reads in low voice to himself / herself*
SPECIFIC INTERNET STRATEGIES	
Reader-based strategies	
*Scrolling (= skimming)	*Student scrolls down webpage in order to get an overview of the topic*
*Using website structure	*Student uses the structure of the website to understand individual texts*
Metacognitive strategies	
*Clicking to links because of personal interest	*Student clicks to links that he/she chooses according to an (expressed) personal interest.*
*Clicking to links because of known words	*Student chooses link because words, e.g. English ones or cognates, are recognized in it.*
*Clicking to links because of task requirement	*Student clicks on a link because the task requires it in some way*
*Going back and forth on website	*Student moves around on website by scrolling up and down or clicking in order to search for information*
*Orienting oneself on website	*Student gets an overview on website in order to orient self and help with search for information*
*Trying out different links	*Student clicks on different links when he/she does not readily find what is being looking for*
*Evaluating link / website	*Student evaluates quality, completeness, usefulness etc. of link or website*
Supporting strategies	
*Using icons	*Student recognizes and uses icons to navigate on website*
*Using (pulldown) menu	*Student uses pulldown menu or menubar at top of website as part of search*
*Using search button *Suchen*	*Student recognizes search button in German and uses it to look for information*
*Using side columns	*Student searches for information in side columns of website (= informational text, not navigational columns)*
*Exploiting Internet resources	*Student uses Internet resources, such as looking for a map, getting additional information*
Relief strategies	
*Clicking rapidly	*Student quickly clicks from one link to the next, in search of information, often without reading texts*
*Reading very fast, inattentively	*Student reads so fast that important details are overlooked.*
*Avoidance	*Student avoids reading a text by clicking to the next link*

3.5.3 Observations

While the students were reading, I observed their Internet behaviour, such as selecting specific websites or changing sites. This was documented by the observational notes and printed images of the selected web pages. The observational notes are holistic descriptions, i.e., they describe as much as possible what goes on in the reading activity.

My role was that of an observer-as-participant. While the students were reading on the Internet, I sat next to them and prompted the verbalization of the reading process where necessary ("Can you say what you are doing now?"). The observations had the function of clarifying points in the audiotaped think-aloud protocols, and give additional information about students' activities which were not easily deducible from the audiotapes. My observations focused on, for example, emotional expressions of interest or frustration, the amount of clicking between pages, scrolling up and down on web pages, going back and forth between pages, stopping to read text sections more carefully, and stopping to ask for help (see Appendix 6, Observation grid).

I did not track students' Internet search behaviour through a computer program, since my focus in this study was on the individual experiences that come to light in the verbalizations by the students, not in exact measures of computer use. In order to be as unobtrusive as possible, I took hand-written notes.

3.5.4 Semi-structured interviews

Retrospective semi-structured interviews gave the participants the opportunity to voice their views, emotions, and experiences with Internet reading. They were conducted either directly after the last think-aloud session or one or two days afterwards. For the

research study, they had the function of clarifying points that had been left unclear in the think-aloud protocols or from my observational notes. The interviews started with pre-formulated questions in order to ensure coverage of topics that are of relevance to this study, such as background and demographic questions. They went on to ask for experiences, opinions and values (see Appendix 5, Sample interview questions). At every stage of the interview, room was left for expansions and additions, as well as new topics that might come up during the meetings. The main function of these interviews was to give greater validity to the think-aloud protocols, in that they shed light on the underlying reasons for students' strategies, and clarified points where the think-alouds did not provide clear information. For example, students might not have been able to express their thoughts clearly while they were solving the tasks, but might be able to explain their behaviour in retrospect.

3.5.5 Assessment of reading tasks

A further set of data was obtained through the task response sheets which students filled out while they were solving the tasks. Since students were free to choose the texts on the websites, traditional reading comprehension tests such as multiple choice, sentence completion or free recall (Bernhardt, 1991) could not be applied. Instead, expected specificity of answers to all of the questions was agreed on by the classroom teacher and me; the answers were then assessed according to pre-defined rubrics (see Appendix 4). The assessment of the reading tasks was rubric-based, i.e., evaluated as to the degree the task had been accomplished (Alderson, 2000; Shrum & Glisan, 2000). A rubric is a list of characteristics used to assess the quality of a learning product. Rubrics "identify the traits

and components that indicate the extent to which a learning outcome is achieved." The rubrics for the task in this study have been developed by me on the basis of the description of rubrics for similar types of tasks in the literature (Blaz, 2001; Wiggins, 1998),[16] and then discussed and agreed upon with the classroom teacher. The response sheets for the reading tasks were evaluated jointly by the classroom teacher and me, to achieve more reliability.

3.6 Data analysis

The categories for coding in this study were "constructed codes" (Flick, 2006, p. 299), based on the lists of reading strategies in the literature (N. J. Anderson, 1991; Grabe & Stoller, 2002; Hosenfeld, 1984), with a few revisions (see Section 3.5.2 on think-aloud protocols). New categories which emerged during the coding of the first think-alouds were added to the list and observed in further cases. The observed strategies and their frequencies were listed in tables for each case (nine students) and each task (four tasks), resulting in 36 tables. I have included the four tables for the focal students (Andy, Doris, and Gail) in Appendix 8 to illustrate how I analyzed their performance. One example of a protocol is shown in Appendix 7. The purpose of the data analysis was to identify the reading strategies used by the students and the difficulties they encountered while doing the tasks. This process of identifying strategies was done by analyzing what the students said, as well as by inferencing from their observed reading behaviour (see "interpretive" reading of the data in Mason, 1996).

[16] In addition, see examples on the website of the Center for Teaching Excellence at St. Edward's University, Austin, Texas: http://www.stedwards.edu/cte/evaluation/rubric1.htm

The resulting lists of strategies were categorized into groups, following Würffel (2006). Most authors differentiate between *cognitive* and *metacognitive strategies* (Cohen, 1998; O'Malley & Chamot, 1990; Würffel, 2006), and I also followed this categorization. I have subdivided the cognitive strategies into *text-based* (bottom-up) and *reader-based* (top-down) *strategies*, since this is a research focus of the study. Text-based strategies are those which take their information from the written text itself on a letter, word, and clause level. These strategies have often been automatised, and were therefore often not observable in the study. Reader-based strategies refer to the previous knowledge which readers bring to the text and which influence comprehension. The *metacognitive strategies* are used to plan and guide the reading process (Grabe & Stoller, 2002; Würffel, 2006). A last group of strategies refers to activities which help the reader complete tasks. These are strategies that students use in order to support their reading, for example through the use of tools (dictionary) or by asking the teacher for help. Würffel (2006) calls them *supporting strategies*, and I follow her terminology.

A new group of strategies emerged in the course of the codings which I referred to as *specific Internet strategies*. I defined specific Internet strategies as those that have not been discussed in the literature on traditional reading strategies. Thus, only those actions count as specific Internet strategies that do not occur with printed material: *scrolling down on the web page* is one example. Following this definition, there are no specific text-based Internet strategies, since all text-based strategies, such as *using cognates* or *use of grammar*, can occur both with printed material and on the Internet. However, I found reader-based, metacognitive, and supporting strategies which are specific to the Internet. With respect to Internet reading, supporting strategies are often related to computer skills.

The next step of the analysis followed established procedures for qualitative studies by examining and reexamining the lists of strategies, lists of difficulties, and observations made by the researcher, and to analyze them for meaningful themes and categories (Flick, 2006; Lincoln & Guba, 2002; Mason, 1996; Merriam, 1998; Miles & Huberman, 1994). Repeated readings established recurring themes that emerged with respect to reading on the Internet in the context of university learning of German as a foreign language.

The students' response sheets were evaluated according to the rubrics which I had developed in cooperation with the classroom teacher on the basis of similar rubrics in the literature (see Section 3.5.5 above and the "Rubrics for evaluating the reading tasks" in Appendix 4). There are four levels of task completion, each described in terms of completeness of the answer and depth of understanding. Thus, the student can achieve a maximum of four points for each question on the response sheet. For example, Doris received three points ("Demonstrates understanding of the texts and topics of the Internet page") for questions 1 and 2, and four points ("Demonstrates <u>good</u> understanding of the texts and topics of the Internet page") for questions 3 and 4 of her response sheet on the *Deutsche Welle* task. The sum of these points (14) was divided by the number of questions (4), and this resulted in a final mark of 3.5 out of a possible 4 points. It is important to note that these points were relative assessments of the completeness and depth of the answer, in relation to what the teacher and researcher expected as an answer.

Data from the initial questionnaires, the think-aloud sessions, the observations, the interviews, and the students' response sheets were triangulated. The result was a set of factors which influence reading success and the use of strategies, for example individual student factors, type of task, and Internet-related factors. These factors are discussed in

Section 4.3. Finally, I used the above results to discuss how my research questions were answered by the study (Chapter 5).

In the following chapter, I describe the results of my study.

Chapter 4: Results

4.1 Description of students' use of strategies

Since one of my research questions was whether the students would show differences in reading strategies depending on the teacher's assessment of their language performance level, the results are presented in groups accordingly. Higher performance within the group (Andy, Bernhard, and Chris), medium performance (Doris, Ellen, and Franka), and lower performance (Gail, Helen, and Ian).

To provide an overview of the frequency with which individual students used different reading strategies, as well as which difficulties they encountered, I have arranged the data in "synoptic tables" (see Appendix 8). The synoptic tables are meant to give a visual overview of the strategies used and their relative frequencies, as one way of displaying the data in a structured form (Miles & Huberman, 1994). Each instance of observed occurrence is indicated by an "X." Below the frequency of strategies, I added (a) the observations I was able to make while the students were reading, and (b) themes and topics that emerged in the process of analysis.

In the following section, I describe each student's use of strategies. Note that three focal students (Andy, Doris, Gail), one from each performance group, are described in greater detail. I chose these three students because they represent typical examples of each performance level. Furthermore, I elaborate on these three students' work on Task 3 (*Deutsche Welle*) because it is a task where more detailed reading had to be done than in the other tasks, and because this task most differentiates the performance levels. The strategy use of the other two students in each performance group is described in a

summary fashion. These descriptions are based on the data collected in the synoptic tables for each task and for all nine students.

At the end of each task description, I present the final score that the student achieved for that task on the basis of the "Rubrics for evaluating the reading tasks" (see Chapter 3, Methodology, and Appendix 4).

To get an overview of the individual characteristics of the nine participants, Table 4 presents relevant information the students gave me in the pre-session questionnaire. Each student is described in more detail in the respective section below.

Table 4: Students' study major, motivation to learn German and specific interests

	Study major	**Motivation to learn German**	**Most interesting aspect of German culture / German language**
Andy (focal student)	International Business	To study and do business in Germany; had traveled to Germany frequently	"Bier, Wurst, Musik" / correct pronunciation
Bernhard	International Security and Conflict Resolution	To live and work in a German-speaking country	Unique culture (as opposed to multiculturalism) / all aspects
Chris	International Business	For leisure and for his major; lived in Germany 4 ½ months as exchange student	Work ethic, family life / grammatical cases
Doris (focal student)	International Business	Minor in German, interested in the culture	Leisure time, music / vocabulary, expressions
Ellen	European Studies	Requirement of study major; one side of family is German	Multicultural society / idiomatic expressions
Franka	Biology	To communicate with the part of the family that lives in Germany	Customs in the workplace / slang phrases
Gail (focal student)	International Business	"a wonderful language"; had traveled to Germany	People and society / pronunciation
Helen	International Security and Conflict Resolution	To know multiple languages for her major	Stereotypes of other cultures / How there are so many different things to say one thing
Ian	Psychology	To speak German fluently; attended high school in Germany (Army)	Music, leisure time / "anything but the articles"

4.1.1 Students with higher level of course performance

Focal Student: Andy

According to the questionnaire which the students filled out before the think-aloud sessions began, this student was in his 4th semester of study, with a major in International Business. He said he used the Internet (in English) about once a day, for email, money, school, job hunt, and other searches for information. Andy believed he had good search skills. As far as the German language is concerned, he professed to read German texts on the Internet frequently for class research papers. His future plans included finding a job with a German company. As for the topics in the German textbook, he liked "Stereotypes," "Leisure Time" and "Music," but did not like "Environment," "Young and Old" and "Family" much. Andy said that the most interesting aspect of the German culture for him was *Bier*, *Wurst* and *Musik* (beer, sausage, and music), which speaks to a very down-to-earth approach. He had traveled to Germany frequently. The most interesting aspect of the German language for him was the correct pronunciation of words, an interesting fact considering that he already had very good pronunciation. He seemed to be a perfectionist as far as the German language is concerned. Also interesting was his response to the question why he had an interest in doing the think-alouds. He said that the interaction between him and the teacher/researcher in the think-aloud situation (which he knew from the pilot session) was fast and immediate, and, as he was a "results-oriented person", he liked to find quick answers to his questions. With the teacher sitting right next to him and available for (vocabulary) questions, this presented the ideal learning situation for him.

His course performance was evaluated by his professor as level 1 in general language ability (1 = higher, 2 = medium, 3 = lower), and also level 1 in reading comprehension. This positioned him in the upper third of the class.

Andy's strategy use in Task 1 (Trip to Germany)

In Task 1, Andy was most interested in general information about *Reutlingen*, as he was going there in the summer on a student exchange. Therefore, he mainly looked for that information, and less for the touristic information requested by the task. He used his good reader-based strategies, for example *using background knowledge, guessing unknown words ("Kurorte, Wellenbad, ja.* Spa treatment?") and previewing *the text* ("It's good to look at the questions, then read the text."), which was used only by two other students (Ellen, Gail), and only once each. He was also able to use the search function *Suchen* efficiently by entering *Reutlingen*. However, in the end his lack of geographical knowledge prevented him from finding exactly what he wanted. His main problem was to understand the categories in the pulldown menu ("*Reisetipps*", "*Reiseziele*", "*Städte*", "*Bundesländer*"), pointing to a vocabulary-related Internet reading difficulty which I observed frequently. And he also used the strategy of *clicking rapidly* very often in this task. This activity is task-dependent in a scanning task, but perhaps also showed his tendency to work too fast and sometimes not carefully enough. However, Andy showed his intrinsic motivation with this task by picking up new words as often as he could, trying to memorize them by using them productively in his think-aloud. (A: "*eine Möglichkeit. Was ist … Möglichkeit?* – Researcher: "Possibility." A: "*Ah! Möglichkeit. Ja, ich glaube, es gibt Möglichkeit zum Lachen hier.*" [Ah! Possibility. Yes, I believe

there are possibilities to laugh here]). He also demonstrated using *illustrations* ("*Ah! Das ist schön! Viele Sachen zu tun hier.*" [Ah! This is beautiful! There are lots of things to do here]) and *exploiting Internet resources* by clicking on maps and locating places that he was reading about ("Ah! Okay. Now I see. Oh, this is the *Nordsee*, and this is the *Ostsee*."). He answered all questions satisfactorily and achieved a result of 3.5 out of 4 for this task.

Andy's strategy use in Task 2 (Music)

In Task 2, it was evident that Andy had good *background knowledge* of the topic ("Oh, there is *der bekannte … Joachim Deutschland*!" [Oh, there is the well-known … Joachim Deutschland!]), and he had even searched for German musicians on this website before. In fact, he completed the task almost more through background knowledge than through reading ("He may not say it but I know he does. He … he plays the guitar … with a punk style."). This was a skimming and summarizing task, and he frequently used *fast clicking* in order to find the necessary information quickly. This was appropriate for this task, and at the same time shows typical Internet search behaviour which I often observed during the think-aloud sessions. The strategy of *asking about unknown words* was mainly used for keywords in the text, and he was often interested in learning more about the German language. He read whole text passages out loud. On the one hand, he was obviously enjoying this exercise in German pronunciation, but he also read to himself in a low voice (*subvocalizing*) when he had difficulties constructing the meaning of a sentence. In the end, when he did not find new information about rap musician Eminem, he quickly lost interest in reading altogether. Because of his good

comprehension and efficient summarizing of the main points the result for this task was 3.8 out of 4.

Andy's strategy use in Task 3 (*Deutsche Welle*)

Task 3 consisted of comparing two news articles on the same topic, one chosen by the student on the *Deutsche Welle* website (www.dwelle.de) of that day, the other one chosen on an American news website. Andy began the task very quickly and confidently, reading through the questions on the worksheet. However, possibly because of his speed, he misread one question ("What's the most current event today?" instead of "What's the most important current event today?"). This speed in reading turned out to be an often occurring Internet reading behaviour, both for him and other students. Andy was the only student among the participants of the study who wanted to speak German during the think-aloud sessions instead of using his L1 (English) as everybody else did, and as asked for on the worksheet. Andy said he wanted to practice his German, and he did so during most of the sessions, which shows his high motivation and his use of the well-known learning strategy *practicing the L2 as often as one can*. His very high level of German productive skills is furthermore documented by his good pronunciation (also rare in the group) and his frequent use of German idiomatic expressions, for example when he said "*Jetzt geht's los"* ("Now let's get started") at the beginning of the think-aloud. He showed good background knowledge of political news, evidenced by his frequent informed comments on the headings and contents of the articles, and this allowed him to quickly choose the article he wanted to read. He observed that since one heard about the Iraq war every day on the news, he wanted to read something a bit different, and looked

for an article on European politics. Once he had chosen the article, he was very eager to read it, and did not pay close attention to question number 1 which asked him to first get an overview of the homepage. I reminded him and he completed the task without problem. He seemed to be genuinely interested in all the different topics on the homepage, summarized them (in German!) and even commented on the events without having been solicited to do so by the task. When he asked for the meaning of an unknown word (not very often) and learned the meaning, he often showed excitement ("Oh, that's what *mutmaßlich* means!?"), and subsequently repeated the word several times in order to learn it. When he read his chosen text, he unfortunately forgot to think aloud quite often, and just went through it silently and quickly. His questions to me were about word meanings (as was the case with most other students), but also about spelling ("*Warum ist Suche mit* capital?") and grammar (*Der Probleme*? Oh, *der* is dative of *die*?), which occurred very seldom with the other students.

Based on his good background knowledge of political events, he often used *making inferences* to guess the meaning of sentences. However, there were also instances when he understood individual words, but could not combine them to understand the meaning of the whole sentence ("Oh, but what does the sentence mean?"). Even he sometimes needed guidance to construct the overall meaning.

He often used the reading strategy of *guessing the meaning of unknown words*, probably due to his good background knowledge about the topic. For example when he came across *Hilfszusagen* (promises of help), he guessed "*Hilfszusagen* … does that mean 'I help you'?" Sometimes he guessed wrongly, as in *jüngste Iraq Geberkonferenz* (latest Iraq conference of the donating countries) where he guessed "So they're the

youngest of the Iraq helpers?", thus using one of the meanings of this polysemic word (*jüngste* = youngest or latest). However, shortly afterwards, he realized that this sentence was not very important in the whole context anyway: "But basically, it's just … it doesn't have any substance at all, the sentence… It doesn't do anything." This use of the strategy *evaluating the importance of guessed words* is a rare accomplishment, since most L2 readers try to understand every single word and often cannot judge whether a word or a sentence is essential for the meaning of the whole text. Andy also often evaluated the contents of the article ("Okay. Well, that's just political saving face."). Most other students were so concentrated on understanding the basic text that they did not venture to comment on it. Later, he commented "Oh, they make us numb with the pictures, of seeing it so often … de-sensitize you …."

When he looked for a parallel article on an American website, he chose the Fox website (www.foxnews.com), because that site would provide "more of a difference" to the German one. Consequently, his comparison of the two articles was quite insightful, including relating the article to events that had happened before. His final result for this task (4 out of 4) speaks to his efficient reading strategies and language knowledge. The results of the other tasks were also above average, though this task was his best, probably due to his intrinsic interest in the topic.

Andy's strategy use in Task 4 (Translation)

On Task 4 Andy again showed effective reading strategies by asking only for keywords, and, when *guessing unknown words*, he also exercised *evaluating guessed words* for text comprehension. His reading was guided by personal interest and not only

by a desire to get the task done. His personal experience with the German culture was evidenced by his *exploiting Internet resources* to search for a map of Luxemburg. His intrinsic motivation to learn the language was shown when he got emotionally engaged at learning something new. Since Task 4 is a translation task, he read the text very carefully, trying to understand all the details. He was one of few students who used *repair* as an explicit correction strategy ("… in the open? Oh, in public. In public, in open…*In offiziellen, in offenen … in öffentlichen Verkehr,* that does mean public, that's not open…"). He was also one of only very few students who were able to *use text structure* as an effective reading strategy. Only when the text became very difficult did he show *avoidance strategies* by talking about his own experiences rather than continuing to read the text. He *evaluated the contents of the text* frequently, which showed a command of metacognitive strategies. His result for this task was 3.75 out of 4.

In conclusion, the protocols show that Andy was a very successful reader who had automatised most lower-level strategies and was able to use higher-level strategies to comprehend a new German text. His high language performance and high motivation seemed to be mainly responsible for this efficiency.

Bernhard

Bernhard was a student in his 6th semester, majoring in International Security and Conflict Resolution. He used the Internet about once a day, searching for information and music, writing and receiving email, doing banking, and doing homework. He seemed to be very familiar with the use of the Internet, which was confirmed by his good computer and Internet search skills. In his free time he listened to German news on the web in order

to practice his comprehension skills. He was an intrinsically motivated student. The topics he was most interested at the time were "Germany in the 21st century", "Work" and "Communication." This interest in cultural and political topics was evidenced by his focused reading in the think-aloud sessions. His motivation to look at German websites was to see "real-world German." He wanted to know how much of this he already understood, and to learn more of this type of German language, which one often does not get in the classroom. His interest in doing the think-alouds was to "monitor one's thought processes", which showed him to be a very reflective type of student. His very critical reading and constant evaluation of the texts corroborated this. Because of time constraints, this student completed only two think-aloud sessions (Tasks 3 and 4) and the interview.

His course performance was evaluated by his professor as level 1 in general language ability (1 = higher, 2 = medium, 3 = lower), and also level 1 in reading comprehension. This positioned him in the upper third of the class.

Bernhard's strategy use in Task 3 (*Deutsche Welle*)

In Task 3, Bernhard showed very profound background knowledge, with respect to both political and linguistic knowledge. He seemed to be intrinsically interested in the topics, which was evidenced when he elaborated on the topics, and made a conscious effort to learn new words. Bernhard furthermore constantly *monitored* his reading – he had a very clear notion of how he was going to proceed with the tasks. He used previously learned reading strategies, such as *rereading* passages of the text in order to interpret other passages, and also specific Internet strategies, such as *using icons*, *using*

an online dictionary, and highlighting parts of the text on the screen, a tool that only one other student knew or applied. In contrast to all the other students, Bernhard read the texts with almost no help from the researcher. When he did *ask about unknown words*, those were always keywords in the text. One of his main strategies was *guessing unknown words*, and he was successful in it based on his good background knowledge and recognition of the textual context. He also used *word formation* (by analyzing words into parts) for guessing unknown words, as well as *text structure* to interpret the meaning, again as one of very few students to do so (besides Andy and Ellen). His background knowledge furthermore made it possible for him to *make inferences* from the text, and to *evaluate the content* of the articles. He was one of just a few students (besides Andy, Ellen and Helen) who *evaluated the importance of guessed words*.

Bernhard's strategy use in Task 4 (Translation)

In Task 4, I did not find any reading difficulties to record, which set Bernhard apart from the rest of the group. He was able to use his good grasp of German grammar to translate the text, an article on economics in an online women's magazine. However, the translation task was more difficult for Bernhard than the reading task, probably due to the fact that the topic of politics was more interesting to him than the topic of economics. Also, there were more idiomatic expressions in the women's magazine, but he completed the task very well, due to his very good level of German. He was one of very few students who was able to evaluate the genre and the author's perspective of an article, demonstrating his skillful mastery of the linguistic features of texts. He stayed focused on the task all the time, with no digressions from it or *avoidance strategies*. Interestingly, he

did not employ *scrolling* but kept reading rather linearly. This certainly had to do with the detailed reading mode of Task 3, but also points to his concentration, as well as the possible interpretation of scrolling as an avoidance strategy.

As a consequence of his high reading level, the results of his tasks were extremely good: Task 3 (*Deutsche Welle*): 4 out of 4; Task 4 (Translation): 3.75 out of 4. This student is certainly an exception in a second-year German course. His linguistic skills are very strong, his motivation to learn and his well-developed text-based as well as reader-based strategies allowed him to complete both reading tasks in an outstanding way. He stayed focused on the task all the time, and did not show fast and inattentive reading behavior as Andy did.

Chris

Chris was in his 4th semester and majored in International Business. He used the Internet twice a day, searching for information, listening to music, and doing his email. He described himself as having good computer search skills, which I was able to confirm through the think-alouds. He had researched German websites for school projects before. According to his German teacher, he had high German language ability. This could be confirmed by his fluent use of German during the think-aloud sessions, including idiomatic expressions. He explained that he had spent some time in Germany. He had a German family background, but no one in his family spoke German anymore. He was learning German for his leisure time and for his major, and in the think-aloud sessions he said that he wanted to have a career involving "some kind of English-German business." The textbook topics which caught his interest most were "Leisure time," "Multicultural

society," and "Communication." With respect to the German language, he mentioned that the grammatical cases (nominative, accusative, dative, genitive) were interesting to him as they are so complex. From the think-aloud protocols one can infer that he had good oral German skills, but that his grammatical awareness was not as well-developed. This can be explained by his having been an exchange student in Germany for four and a half months, where he learned to speak German, but did not receive formal grammatical training.

He was evaluated by his professor as level 1 in general language ability (1 = higher, 2 = medium, 3 = lower), and also level 1 in reading comprehension. This positioned him in the upper third of the class.

Chris's strategy use in Task 1 (Trip to Germany)

Chris had no problems understanding the texts, which is in accordance with his standing as a higher-performance student. His good *background knowledge* of Germany helped him complete the search tasks well. He was able to answer the questions almost without reading the texts in detail, relying on his previous knowledge. Three times when he did not find what he was looking for, he abandoned the topic. He was looking for information about Reutlingen, but could not find it easily: "So let's just change it to Stuttgart." This was also due to the lack of navigational vocabulary, a characteristic that occurs even with high-performance students. He is an intelligent reader, and was able to *repair*, i.e., self-correct reading mistakes ("Oops, nicht *Fahrkarten*, I need, um, *Fahpläne* … *Fahrpläne* … is like the plural of Fahrplan, right?"). However, in this task Chris often digressed by talking about his own trips to Germany ("*Wann ich in Deutschland wärest*

es war ein, um, ein Nacht wo es war, um, negative 19 Grad Celsius." [When I was in Germany it was minus 19 degrees Celsius one night]). Like the other two high-performance students, he *clicked to links because of personal interest* ("Yeah, anything with fireworks has gotta be awesome." – "Yeah, there's one thing I want to research in Germany kinda …."), and *tried out different links* to a large degree. He *exploited Internet resources* by clicking on maps ("Oh yeah, I wanna see if there's a certain thing in Reutlingen, so I'll check that out in a second. Let's find a map real quick."), and participating in a game where one had to show one's knowledge of German tourist attractions. All these behaviours showed him to be an independent reader with strong personal interests and good language mastery, but one who did not always have a strong focus on the task at hand ("Why am I doing this, we're not supposed to be doing this. I'm getting out of focus here."), and abandoned a task when it became complicated.

The result of this Task was 3.67 out of 4.

Chris's strategy use in Task 2 (Music)

In Task 2, he first read the long biographical text silently, without *asking for the meaning of unknown words*, and summed it up quite well. He has a good *background knowledge* of the musicians, and therefore understood the texts correctly and got enough out of the websites for his task-oriented purposes. He expertly *skimmed* through texts in search of more information, *clicked on links because of personal interest* ("Right now I'm writing down this link that would link to where Oasis is playing in *München*, to find that out."), and was able to *evaluate the website*, which is usually a sign of good higher-level reading strategies. His enthusiasm for the musicians inspired him to sing aloud one

of the songs, which shows his positive engagement with the task. However, he often misread or misunderstood words due to *fast reading* ("Oh, I'd have to go back and look at it again. I didn't really catch it."). He *guessed unknown words* very often and very confidently, but he often guessed wrong: "*Drogenpartys* would be drug parties obviously. *Stören letzte Ruhe* means awaken their last quiet or?" (It means "disturb their final rest"). This is an example where a linguistically strong student does not work to his full potential because of working too hastily. Probably for the same reason, he used grammar as a metalinguistic strategy very seldom to interpret the meaning of a text. He did not want to take the time to analyze sentences. Because of his fast reading, he got lost on the website a few times. He did not *monitor* his reading, at least not explicitly. Chris did not *use icons* or *pulldown menus* to organize his reading, even though he did possess good computer skills in general and seemed confident with websites. Surprisingly, there was often a lack of basic vocabulary, such as *suchen* for "search." In cases where he did not quickly understand, he went to a different text or even switched to a different link. This can be seen as a typical case of an *avoidance* strategy. On the positive side, he was interested in the language, and often wanted to know the exact meaning of a word.

The result of Task 2 was 3.2 out of 4.

Chris's strategy use in Task 3 (*Deutsche Welle*)

In Task 3, I observed the same fast reading behaviour. Thus, although Chris understood the article quite well, and even used *grammar* to interpret the meaning (recognition of passive voice), his *inferences* were often too hasty and therefore erroneous, for example when he did not read a sentence to the end and drew premature

conclusions about its meaning ("And it says, *weil letztlich dieser Kampf nur im Rahmen einer geistig-politischen …*, so before it was just a war of politics, right?"). He needed the researcher's help with the detailed meaning of words or to confirm his guessing. Chris has good background knowledge, like Andy and Bernhard, but sometimes not enough to understand a specialized political article ("Um … G-8 … what is G-8?"). He sometimes employed *word-for-word reading*, and *translated* whole sentences, which is unusual for a student of his language capabilities. He seemed to be more at ease and also more successful in higher-level strategies, such as *predicting* the contents of a text (".. the US soldiers took advantage of the people there. It hasn't said that yet but I'm sure it'll get on to that …"). This strategy was very rarely used by other participants. When he did not read too fast, he was mostly efficient in *making inferences* ("So this is basically saying they're not going to deal with that."). He had problems with the lower-level strategies, and although a quick thinker, he sometimes was not careful enough with details. For example, he misinterpreted prepositions. (… *Einreise in* <u>*die USA*</u> *als wenig hilfreich.* So it's basically saying that he doesn't understand why they would need so much, um, security <u>for the Americans coming</u> over.). This kept him from obtaining better results on his reading tasks.

Chris's result for this task was 3 out of 4.

Chris's strategy use in Task 4 (Translation)

For Task 4, Chris came 25 minutes late. He quickly chose a website, the first on the list, and again chose the first article on that website, without looking at the other ones ("Yeah, that'll work. It's right there in front of me.") He thus *avoided* a more careful

investigation of other possible articles or links. In his translations, he understood the German text well and used German idiomatically in small remarks to me, but his use of the language showed serious grammatical errors. He showed little awareness of grammatical structures ("Did George Bush get interviewed by him or is he interviewing him?"), produced a rather imprecise *translation* of the paragraph, and performed the required *evaluation of the online translations* only on a word level ("As one of the main differences, one [online translator] has German words in it, the other one doesn't … With the Babelfish, it's trying to understand a couple of words it might not know, um, they are very very similar … in a way they are, um, translating the differences, um, *abschulisch* is in the middle here, and they don't translate that in this one"). He did not capture text-level differences between his own translation and the online translation, and did not analyze the lexical differences any further. This might be due to the time constraints that coming late imposed on him, although he later showed interest in clicking to other sites, after having finished the task ("Let's try this one, 'cause I already know the name of their football team and their soccer team"). Thus, it is more plausible that his fast and word-level analysis is due to his lack of grammatical knowledge.

The result for this task was 3.25 out of 4. This is surprisingly low for an A+ student, and it might be explained by the analysis of the strategies in this and the other tasks. He showed a very independent but often not very careful problem-solving style.

As a preliminary general observation, the three higher level students in the group completed the first two tasks successfully, in accordance with expectations. For students of this high standing, reading on the Internet did not seem to present any Internet-specific

difficulties. Task 3 (*Deutsche Welle*) revealed a difference, however. Andy and Bernhard had good background knowledge of political events, and this helped them comprehend the complex texts through *making correct inferences*, whereas the third advanced student, Chris, did not have sufficient background knowledge and also did not apply as many successful reading strategies as the other two. Therefore, his reading was less efficient. Task 4 required grammatical analysis. While Andy and Bernhard excelled in this area, Chris showed undeveloped grammatical awareness and therefore scored lower on Task 4.

4.1.2 Students with medium level of course performance

Focal Student: Doris

Doris was in her 5th semester and majored in International Business. She was also minoring in German. She used the Internet once a day for email, to scan the University website and to google. She said she had good search skills, a claim that was verified in the think-alouds. Doris read German texts on the Internet from time to time to get information about the country, and for the news in German. She said that her minor in German was her motivation to learn German. Her topics of greatest interest were "Leisure Time," "Music," "Stereotypes," and "Family." She was especially interested in learning about the German culture. As far as the German language is concerned, she was mostly interested in vocabulary and idiomatic expressions. It was interesting to see why she was looking forward to reading German websites. She believed that "an exposure outside of the classroom would be beneficial." This is a strong argument for the use of the Internet in foreign language teaching, i.e., to give students the opportunity to come

into contact with authentic language. When asked why she was interested in doing think-alouds, she said "It will be interesting to compare my ways of figuring things out with other students. It would be interesting to see if I make it harder for myself to learn." This points to the use of think-alouds not only for research, but also as a teaching tool to promote awareness of problem-solving styles and strategies.

Doris' course performance was evaluated by her professor as level 1-2 in general language skills (1 = higher, 2 = medium, 3 = lower), and level 2 in reading comprehension. This positioned her in the middle stratum of the class.

Doris's strategy use in Task 1 (Trip to Germany)

In Task 1, Doris's personal interest in Germany and consequently her motivation to read the tourism website were easy to observe, for example by her *asking several times about details of the German culture*, and *comparing the German culture with her own*. Doris was going to Germany the following summer, and as a class project she chose the description of selected German tourist sites. Although she got lost on the tourism website a few times (which is also due to the badly structured site), she managed to find the information she was looking for and to write down comprehensive answers. She explicitly used illustrations in order to understand texts. As far as word recognition is concerned, Doris once misread *klein* (small) for *kein* (no) which led to a comprehension error. Another time she had difficulty with an idiomatic expression. She could not assign meaning to the expression *ein blaues Wunder erleben*. Literally, it means "to experience a blue wonder," but refers to experiencing a surprise. In the text, it was a play on words, since it appeared in the context of the sea with its connotation of being blue. Another

difficulty for her was her expectation of a tourism website. Doris was surprised about the culturally different approach: "Personally, it doesn't seem … It looks like they are going for a different approach because I would not go to Germany to go to spas, bike riding, - I would go to the Alps, and beer gardens, and um, you know, famous cities, museums, and things like that. But evidently they are just trying a different approach, I guess." She also expressed surprise about the heading *Hamburg – Stadt der großen Gefühle* ("Hamburg - City of Great Emotions"). At one point she was surprised by the different layout: She saw the *Gewinnspiel* (prize game) on the right-hand column and thought it was an advertisement. "It kind of looks fun, but we don't want to do it, because it takes us off the topic."

The results of her tasks were good. For Task 1, her result was 3.75 out of 4.

Doris's strategy use in Task 2 (Music)

For Task 2, Doris was able to relate to the German singer Yvonne Catterfeld since she had heard about her in class. She clicked on several links because she expressed an interest in the topic. Doris used the Internet-specific strategy of *going back and forth on the website* until she found the way to read the musician's biography. She had mistakenly clicked on the name of a CD and was taken to the Amazon website. Thus, moving around on the website helped her find the text which she subsequently read in detail. In the beginning she was a bit frustrated because she misunderstood the first sentence in the biography, but with her perseverance in the task, despite some frustrations, she showed herself to be a motivated and conscientious reader and learner. Later, she used the same strategy to find the search button and to look for further topics (her own questions about German music): "So let's go back to the top, and let's go back to the homepage … so I

think they make it fairly easy, you know, to search for the artist, *Suchen* … it looks like you can search for a lot of things…". She never digressed from the topic at hand. She always wanted to get everything right. This was also evidenced by her answer to why she liked the think-alouds. She said that they made her reflect her learning process. Her high motivation for learning in general was also shown by the fact that she often referred to information she had obtained earlier in class.

In Tasks 2 and 3 Doris often *guessed unknown words*, and was able to *infer* the meaning of sentences from the context or her background knowledge. This and her skill in summarizing text passages (even before asking about unknown words!) showed high general cognitive abilities. Her good computer search skills also helped her complete the reading tasks in a competent way. For example, she was one of only a few students who *used the pulldown menus* efficiently, and she was not afraid of *trying out different links*. She *monitored* her own reading, *evaluated guessed words* a few times (rarely done by other students), and stayed *focused on the tasks*. Sometimes she was content too soon with what she had found, especially towards the end of the session when she got tired. She then often used the first option of a number of possible URLs. She showed trial and error behaviour in her search. With respect to the texts, she was usually only interested in the gist of the texts. This might be explained by a typical Internet search behaviour, or may be the result of former teaching of reading strategies. In text-based strategies, Doris sometimes had difficulties in recognizing cognates, which might be because of her medium level of language performance. She did not use grammar for text comprehension in this task (but was able to use it later when analyzing the online translation in Task 4).

The result of this task was 3.5 out of 4.

Doris's strategy use in Task 3 (*Deutsche Welle*)

Before starting to read in Task 3, Doris scrolled down the *Deutsche Welle* homepage quickly in order to find a topic that interested her. As she said in the questionnaire, she has ample experience with surfing. She categorized the website as follows: "And you have like … political information," but she did not seem to be very familiar with the genre. She described it as "Yeah, it's always like yeah, yeah at the end, and Bush did this and that …," instead of identifying it as a newspaper article. She said later that culture would have been more interesting for her than politics, but that the task requirement (comparison with a US website) made her choose a political topic. In this context it is interesting to note that the term "political" has very special connotations for Doris. She sees political texts as ideological, with a special interest, or biased, almost in a negative sense. This was surprising given the fact that in the questionnaire she reported that she sometimes read German news websites outside of the classroom. Maybe she wasn't reading political news, but cultural news.

Doris identified the article at the top of the page as the most important one, and guessed the meaning of the heading through the use of *cognates* (*Katastrophe* - catastrophe). When she tried to decipher the title *Nahostpolitik*, she parsed the compound in wrong places, thinking it had to do with "host" (*Na-host-politik*) rather than *Nah-ost-politik* (Near East politics). Thus, the strategy of *using word formation* for comprehending unknown words did not work for her. Using cognates again, she recognized "pirates" for *Piraten*, but failed to recognize the meaning of *Paradies* (paradise). She continued reading in a *word-for-word* manner, often asking me to verify

her (rather vague) guesses. Once she had chosen her text (*Paradies für Piraten,* "Paradise for Pirates"), she continued guessing on the basis of *cognates*, but again was often wrong. She thought *Pflanzen* meant "peaches" or "pears," maybe by association with the term paradise. When she heard that *Pflanzen* meant "plants," she immediately jumped to the erroneous conclusion that the article was about drugs. Thus, she used *background knowledge* (plants in the context of Brazil), but applied stereotypes and guessed wrong. She needed help in deducing that the article was about the smuggling of tropical plants. She was very surprised: "That is a new concept." When she skimmed over the next article about the former Jewish magazine *Der Aufbau* ("The Construction"), she again needed help because her *background knowledge* was not sufficient. She finally chose the political article about the Iraq war, argumenting that that topic would be found on an American news website as well. She tried to first *get an overview* of the German article, which is a good reading strategy, and *predicted* what the article was about. She also employed *inferencing* frequently when she continued to read, thus using high-level strategies to compensate for her lack of vocabulary. In this task, she often had to *ask for the meaning of unknown words*. Her *background knowledge* was not solid enough to understand the main point of the text, namely a comparison of the civil war in Lebanon 20 years ago with the current war in Iraq. Furthermore, she did not recognize the past tense form of some verbs, and therefore did not understand that the Lebanon war was an event in the past. She read it as though they talked about today. Later, in the post-session interview, she attributed her error to her lacking knowledge of the grammar: "If I had known that this part was written in the past, I would have recognized …" It is debatable here whether her lack of understanding is due more to missing background knowledge or to her lack of

language schemata. Doris seemed to be overwhelmed by unfamiliar vocabulary AND unfamiliar topic and text type.

Comparing the American and German articles and finding differences was interesting for Doris, however. She made comparisons before she reached that part of the task, i.e., she compared both articles as soon as she had read a portion of the American article. Her capacity of *inferencing* helped her understand the basic differences between the articles, and she recognized the two differing perspectives (war seen as a world event vs. how it affects the US) very well. She mentioned that the experience of comparing two culturally different ways of presenting the news was very fascinating. Here lies a great opportunity offered by Internet reading. Readers can easily obtain information on different topics, such as university websites, music websites, advertisement, etc., and identify their cultural differences. Doris showed good *evaluation* skills. The comparison part of the task generated the longest uninterrupted oral text by the student – this engaged her interest most.

In answer to the question on the worksheet "What did I learn?," she answered "I got a different perspective, and worked on my vocabulary and reading skills." In the evaluation question at the end, Doris mentioned that she had heard about different ways of news reporting in the US and other countries. This background knowledge led to certain preconceived expectations about the outcome of the task and made the task of comparing German and American news articles more interesting for her: "…but you know I never took the time to look at one website and compare it to the other and see, you know, the differences, and I guess politics and what we actually talk about in the United States." She was able to compensate her linguistic difficulties with higher-level reading strategies

such as *using the website structure* (one of few students to do so) and *evaluating the texts.* Furthermore, she *went back and forth on the website* when she was looking for a parallel American article. "Okay. No. I'm going to go back for what I want. Would it be okay to look at … I'll go back to the main page where I started. And now I go to "Bush downplaying Iraq costs." The purpose of this strategy was to find the texts she needed to complete the tasks, and she used it efficiently. Finally, her good skills of expression (in her L1) when she answered the questions in the task, as well as her dedication and motivation to perform well, contributed to her good mark.

The result for this reading task was 3.5 out of 4.

Doris's strategy use in Task 4 (Translation)

Doris's intrinsic motivation to learn German was shown in her enthusiastic way of engaging in Task 4. She said that she wanted to use the online translators "to refresh her memory", not to save time and work, as is typical of most other students. She *exploited Internet resources* skillfully by highlighting the paragraph she wanted to work on. When translating the paragraph, she guessed words successfully ("*Sessellift*? … like a ski lift? … And *ein Achter*. Eight? Eighty? … *Gondelbahn* … Just like a carrier I guess."), but I had to tell her the meanings of others. She recognized linguistic differences between German and English sentence structures, commenting on differences in style and semantics, and experimented with example sentences very knowledgably. She tested out several sentences (self-initiated) to see how they would be translated by the different systems, thereby learning about contrasting structures of German and English respectively. She began with a simple sentence: "I'm going to the beach," and went on to

more complex sentences ("Okay. Let me try maybe something more complicated), such as "I told her that I was going to the beach." Through the translations, she also became aware of second meanings of words and typical idiomatic expressions, e.g. *es gibt* (there is/there are; lit. 'it gives'). Although she sometimes lacked the grammatical terms to describe the differences ("the word order is a little off"), she recognized them, and was able to describe other differences adequately ("yeah, okay, you see, this is … a wrong preposition."). As in the other tasks, she was often unsure about the pronunciation of new words, which is surprising for a student of her overall course and task performance.

The result for Task 4 was 3.67 out of 4. In all, her results were high for a medium-performance student, and point to her strong motivation, her genuine interest in the topics, and good reading and problem-solving strategies. The text-based strategies (*using vocabulary* and *grammar knowledge*) were relatively weak, but did not seriously impact her final results.

Ellen

Ellen majored in European Studies and was in her 4th semester. She used the Internet about once a day, for email and information search. She looked up information on German universities and cities because she wanted to visit Germany in the near future. As for her reason for learning German, she explained that one side of her family was German (mother), but that she did not speak German with her. Outside of class, she had tried to read her mother's German books, but found them too advanced. Instead, she read the German magazine *Der Stern*, since it has many pictures. Her main interest in German culture stemmed from the fact that it is a multicultural society. The textbook topics

"Communication," "Germany in the 21st Century," "Family" and "Multicultural Society" interested her most. As for the language itself, she found idiomatic expressions and their origins fascinating. She was interested in looking at German websites, but feared that they might have advanced sentence structure and unknown expressions. A concern with the think-alouds was that it might be difficult for her to be watched and assessed while she was working. But she believed that these sessions could help her with her Internet skills.

Ellen's course performance was evaluated by her professor as level 1-2 in general language skills (1 = higher, 2 = medium, 3 = lower), and level 2 in reading comprehension. This positioned her in the middle stratum of the class.

Ellen's strategy use in Task 1 (Trip to Germany)

Task 1 had strong personal relevance for Ellen, since she was going to Trier that summer, and her sister had just traveled to Germany. She showed a genuine interest in the task, which could be witnessed by her animated voice. Her family ties and former visits to Germany had provided her with good background knowledge, and she even knew the tourism website from her own searches. Although she claimed that she did not speak German with her German mother, her pronunciation was very good, and she must have frequently heard German in her family. She was one of the students who used *subvocalizing* most, perhaps because she felt comfortable pronouncing German words. Her well-developed computer and Internet search skills were evidenced when she *used the search button*, *pulldown menus*, and the *side columns* efficiently. She also *monitored* her reading, controlling the process of finding information explicitly ("This webpage, um,

kinda offers a view of the city, you know, kinda gives you an idea of what the city has in it.”). As for reader-based strategies, she used *guessing unknown words* on the basis of *word formation* successfully (“Offer you … *unvergleichlichen* … is this like ‘unique’? … I just think ‘cause like, *gleich* is the same, so I figured …”). She displayed good computer skills, but sometimes *clicked too fast* before understanding what the link was (“No, I tend to read over things, so …”). Consequently, she got temporarily lost on the tourism website.

The results for Task 1 were 3.52 out of 4.

Ellen’s strategy use in Task 2 (Music)

Ellen was also familiar with the topic of Task 2 (Music), having had personal acquaintance with German bands and dance groups. Ellen found the youth-oriented text on the music site easy to understand. Therefore, she was able to use the same productive search strategies as in Task 1. She used *previewing* to get an overview of the *structure of the website* before reading (“Ya, I’m just looking at the different links that they offer … and they have up here a couple of American bands ... and international music and then … they also have … interviews … that’s interesting”), was unusually adept at *guessing unknown words* (“Right now I’m on the first sentence. And I’m trying to figure out what *Zeichen* means. … Oh, are they talking about … is that like a birth sign? … So she is the sign of the fish?”), and referred to her mother as having taught her this strategy. Very often, she explicitly said “I’m guessing this is …” or “I am going off on a tangent here ..” and showed her risk-taking behaviour in this respect. Again, she used (fluent!) *subvocalizing* as she was trying to understand the meaning of the text. She also made use

of metacognitive strategies when she *evaluated the website*, or used *rereading* to correct comprehension mistakes. In this task, Ellen engaged in *relating text to personal experience* to a great extent, since she had been in Germany with her dance group. This resulted in motivated and successful reading.

The result for Task 2 was 3.85 out of 4.

Ellen's strategy use in Task 3 (*Deutsche Welle*)

Ellen thought that Task 3 was considerably more difficult than Tasks 1 and 2. As in the other tasks, she tried to *guess unknown words*, for example through *cognates* ("… like it can be 130, um, *Grad*, is that like degrees or?") or *word formation,* but she sometimes guessed wrong ("Okay, so, cause the radiation and stuff. Alright, and so then, is *Sicht* [sight] kinda like, *sicher*, with security or?"). A few times Ellen referred to *grammar* when she interpreted a sentence, for example when she recognized the verb at the end of the sentence, but at other times had problems recognizing the subject of the sentence. In this task, as it presented difficulties for her, she used *word-for-word reading* when she could not otherwise understand. But she also applied reader-based strategies efficiently, such as frequent *skimming*, *continuing to read* when she did not understand everything, *making inferences*, and *using website structure* ("I'm saying the most important current event today, since it's the first listed one, is dealing with the war and with terrorism"). She used good metacognitive strategies by *previewing the text,* as one of only three students who used this strategy at all. In this task, she chose a text on possible future life on Mars, a topic she was personally interested in, but she did not have enough background knowledge or grammatical knowledge to help her understand details in the

text. Instead, she often digressed and *related the text to her own personal experiences*, which kept her from reading and understanding the text in detail. She understood the text in its overall content, however. Again she *subvocalized* often while trying to understand.

The result for Task 3 was still 3.6 out of 4. The high mark in this task suggests that her success in reading was based to a great extent on motivation and well-developed reader-based and metacognitive strategies.

Ellen's strategy use in Task 4 (Translation)

The text which Ellen used for the translation exercise was thematically not interesting for her, and she lacked the background knowledge (Labour disputes in Germany). It was an extremely dense political informative text which she had chosen (so she explained in the post-session interview) because of the attractive visuals. It showed a laughing young woman in front of a German flag. Here, the visual information was misleading; she had hoped to read about a topic related to the situation of women in Germany ("I think it has … something to do with, um, the women's wages?"). Her usually good pronunciation failed with this difficult text, and she could not apply *guessing* and *inferencing* skills because of lack of specific political vocabulary ("so this is the social … or the *Sozialabbau* [cuts in social services]… is that a social group?") She saw where the main problems lie with online translations ("the computer doesn't look for … how it relates to the rest of the sentence or … or what exactly … it's just translating each word for … yeah…"), but did not have grammatical awareness to see specific problems, such as the use of pronouns within the text context.

The result for Task 4 was 2.67 out of 4. The lower mark in this task points to language difficulties with complex texts, which is in accordance with her standing as a medium-performance student.

Franka

Franka was in her 2nd semester, majoring in Biology. She used the Internet about once a day for email, and to search for information. She had read German Internet texts before for research on trips to Germany or for research for her German classes. Her reason for learning German was related to family ties in Germany. She said she was especially interested in the culture. Of all the topics which were discussed in her last German course, she found customs in the work place the most interesting. As for the language, she was mostly interested in slang phrases. She expected to broaden her vocabulary and learn better sentence structure by looking at German websites, although she feared finding many "long words" on the Internet. She was interested in think-aloud sessions mainly because that might give her the opportunity to read various German websites.

Franka's course performance was evaluated by her professor as level 1-2 in general language skills (1 = higher, 2 = medium, 3 = lower), and level 2 in reading comprehension. This positioned her in the middle stratum of the class.

Franka's strategy use in Task 1 (Trip to Germany)

As with Ellen, Task 1 had personal relevance for Franka since she has family in Germany and visits often. She seemed to be familiar with German websites, although frustration arose due to her different expectations based on American tourism websites where one buys trips or clicks on pictures – both were not possible on the German site, published by the German tourism board (www.deutschland-tourismus.de). As far as the tourism and music websites were concerned, Franka did not seem to have problems understanding the texts. She had a good command of everyday German. She used a number of *avoidance strategies*, for example when she readily accepted the first answers, used information that she came across accidentally, or gave up searches quickly when they did not lead to ready answers. She did not express an intrinsic interest in the task questions. However, she became emotionally engaged whenever she learned new facts, for example the price of train tickets or different types of sports at the university. There was surprisingly little scrolling. Her failure to get 100% for Task 1 is mainly due to very *rapid clicking* and somewhat superficial answers.

Her result for this Task was 3.5 out of 4.

Franka's strategy use in Task 2 (Music)

In Task 2 she often *read too fast* and *without attention to detail* and was therefore sometimes mistaken in her understanding. She showed good background knowledge of German pop music, and also knew the necessary navigating vocabulary, a problem for most other students, and she frequently employed *skimming*. However, she did not *guess many unknown words*, and never used *word formation* for decoding. She also failed to *connect the texts to her background knowledge* explicitly, although she could have done

so. On the other hand, because of her good command of everyday German, she was able to *make inferences*, albeit sometimes too fast. She also showed good computer skills, for example by *using icons*, *the search button, side columns*, and even *highlighting* on the screen. She became genuinely excited when she perceived a possibility to buy CDs online. In this task, she preferred listening to the music instead of reading the biography as the task required. Her summaries were written very fast and only included general information. She often gave the impression that she wanted to finish the tasks quickly.

The result for Task 2 was 3.4 out of 4.

Franka's strategy use in Task 3 (*Deutsche Welle*)

In Task 3, which required more formal language skills, Franka had to *ask for many words*, and almost never *guessed at their meaning*. There was no *inferencing* at all for this task. Her otherwise good language skills seemed to be restricted to everyday language. She mixed up the contents of the German and American articles, probably due to her lack of pertinent *background knowledge* in this political topic, or *fast reading*, and her summary remained very vague. She did not take the time to look more closely at the sentences. When asked to describe the differences in perspective between the American and the German articles, she did not find many ("I didn't really see a difference in perspective …, rather just more detail on one side than on the other"). With this student, there was a gap between her (medium level) course performance and her task completion in this study, which might be due to problem-solving and working styles. Another explanation is that she was not very motivated to do the tasks, since the "stakes" were not

very high; that is, the extra-credit points that students received for participating in the study did not have a major impact on their course grade.

Franka's result for Task 3 was 2.33 out of 4.

Franka's strategy use in Task 4 (Translation)

In Task 4, Franka was delighted to learn more about online translators which she used in her school work (though the teachers do not allow it, as she admitted). She understood the text quite well, but was not able to find structural differences between German and English as evidenced in the online translations. Instead, she noted differences in the user interfaces such as their user-friendliness or whether they allowed to type umlauts. She showed little grammatical awareness. When she guessed words, she was not able to determine the part of speech, for example, of the adjective *entzückend* (charming): "um … *entzuked* … *entzückendste* … that means to decorate?"

The result for this Task was 2.75 out of 4.

To summarize the results in the medium-performance group, all three students understood the texts in Tasks 1 and 2 fairly well. A personal interest in traveling to Germany or in the German music scene helped considerably. However, differences between the students became apparent with Tasks 3 and 4. The topic was of less interest to the students, and their background knowledge was not developed enough in political topics to help them make inferences for text comprehension. Also, their language skills were often not sufficient to guess unknown words. Only Doris and Ellen were able to successfully use reader-based and metacognitive strategies. Franka's results confirm the

observations made during the think-aloud sessions, that she had good everyday language skills, but that she had problems with more formal texts or linguistic awareness tasks. Her lack of background knowledge and somewhat inattentive working style is also reflected in the lower results in the more demanding tasks.

4.1.3 Students with lower level of course performance

Focal Student: Gail

Gail was an International Business major, with a minor in German. She used the Internet about once a day, searching for information, music, or doing email. On the pre-session questionnaire she reported that she had good Internet skills, and that she had read German websites before, e.g. for information about the country and the German news. She had a professed interest in German culture, as well as in language expressions. The most interesting areas of German culture for her were things which Germans do "outside of stereotypes," e.g. vacations, music, and fairly tales. The topics in the textbook that interested her most were "Leisure Time," "Music," "Stereotypes," and "Family." Asked about the expected difficulties when reading texts on the Internet she mentioned limited vocabulary and lack of good grammar skills. She also mentioned that she was interested in think-alouds and explained: "One could learn better skills for searching the Internet on other languages by using key techniques."

As far as her language skills were concerned, she was evaluated by her professor as 2-3 in general language ability (1 = higher, 2 = medium, 3 = lower), and 3 in reading comprehension. This positioned her in the lower third of the class.

Gail's use of strategies in Task 1 (Trip to Germany)

Gail, as many of the other students in this class, had gone to Germany before, so Task 1 had personal relevance for her. She also hoped to go to Germany as an *au pair* girl during the summer. She started the task with interest, aided by her good Internet search skills, for example *using the search button*. However, her vocabulary and grammar were not sufficient to construct the meaning of the tourism texts. On this website, she mainly *used illustrations* for comprehension. This is an appropriate reading strategy for this type of task (*scanning* for information), but it also leads to superficial reading. The same is true for *scrolling*, which she engaged in to a large extent in this task, though often too fast. She rarely *connected her background knowledge* of Germany to the texts she was reading. I had to help with vocabulary to a large degree, as Gail only rarely *guessed unknown words* herself, and when she guessed, the guesses were often not strategic and led to wrong conclusions. On her own, Gail might have given up searches for information several times because of lack of navigational vocabulary, for example categories in the pulldown menu or the list of websites which she got through the search function ("I guess just random information from what I can tell … or … more about like traveling and activities I guess … like, so …"). She clicked on a link because it was the first one on the list, although she was looking for a different topic. She understood very little of the texts ("Something about 'storm', I think *Sturm* [storm] is the only thing I get in that sentence.").

The result for Task 1 was low: 2.6 out of 4.

Gail's use of strategies in Task 2 (Music)

At the beginning of Task 2, Gail said that this topic was within her interest, and that the text seemed to be easier than the political one in Task 3 (which she had done before). However, she again lacked even basic vocabulary and did not always understand the text. She never read any parts of the text aloud, which might be due to her insecurity in pronunciation. She showed relief and even pride when she did understand a text passage, and she showed satisfaction when she learned a new fact about a singer ("Wow!"), but she often expressed frustration when she did not understand the text. Because of her lack of navigational vocabulary, she got lost in the hypertext structure of the website when she was looking for the lyrics of a song. In this task, *guessing of unknown words* was more frequent, but not often successful, since Gail lacked the threshold linguistic knowledge to make informed guesses. Gail tried to listen to the CDs, perhaps indicative of her trying to avoid reading the accompanying texts.

The result of this task was 2.5 out of 4.

Gail's use of strategies in Task 3 (*Deutsche Welle*)

Gail oriented herself well on the *Deutsche Welle* homepage, and quickly found that the most important news item was in the middle of the page. She *predicted* the main topics of that website to be political (using titles to form hypotheses about content of texts). Then, as she tried to understand the content, difficulties became apparent. Her pronunciation of unknown words was weak, sometimes incomprehensible. She started to read *word-for-word*, and frequently *asked for the meaning of unknown words*. Before understanding the first topic, she *skipped* to the second one. The second topic that she

tried to understand on the homepage was under the main heading of *Kultur* (culture), and had a very complicated title: *Baustellenbesichtigung in der Hauptstadt* (A visit to a construction site in the capital). She understood the last word (*Hauptstadt*) but not the first, which is indeed a long compound with a specific meaning. After learning what it meant, she chose this article because it concerned a cultural topic and not a political topic. In this way she was able to use her *background knowledge* of the Second World War in Germany. She guessed the meaning of the word *Mahnmal* in the subtitle *Holocaust Mahnmal* (Holocaust Memorial) since she knew that the Holocaust is something people want to remember through monuments. But subsequently her background knowledge was not sufficient to decode the word *Juden* as "Jews," guessing instead that it meant "the dead." She continued reading in this fashion, *word-for-word*, always stopping at each unknown word and *asking for the meaning*, rarely trying to *guess the meaning* from the context. Equally consistent was the mispronunciation of new and unknown words, which indicated that she had not automatised German word recognition, but probably read unknown words letter for letter. This weak word recognition ability led to misreading words, for example "... it says *weder* violence…again …" confusing *weder* (neither) with *wieder* (again), which led to an incorrect interpretation of sentences.

Another problem occurred with the structure of German sentences, e.g. the verb-final part of a *verbal complex*, containing either the participle in a perfect tense, or the prefix in a separable verb (e.g. *anfangen* "begin," similar to particle verbs in English). An important reading strategy for German texts is to locate these parts at the end of the sentence, or, in subordinate clauses, to locate the conjugated verb at the end. A reader who reads *word-for-word* will only arrive at this core part of the meaning of a sentence at

the very end, and lose valuable time constructing an erroneous hypothesis about the meaning of the sentence. Gail furthermore often lost the meaning of a sentence while she was concentrating on each unknown word, "… ten years since … I don't know. I still don't understand the sentence. They decided that they would build it, or …" Further on, as she was rather frustrated about so many unknown words and her inability to construct meaning, she said that she was "just skimming the paragraphs, looking for if there was something that jumps at you right away that I would understand …," and shortly afterwards "… if I were just reading this for leisure, I probably … I mean, unless there is something that really interests me, I probably wouldn't bother to get a dictionary, you know. Get from it what I could understand." She might even desist reading the text altogether after a while.

Gail also did not *use illustrations* for text comprehension. When she *asked for the meaning* of the word *Stelen* (columns), I asked her if she had looked at the picture when she was reading. She replied "No I didn't. I really didn't." The pictures would have helped her, but she explained that she was too focused on the words to notice the picture. Interestingly, she explained that she is normally a "big picture person," and that she used graphic information all the time when reading her textbooks, mainly because the authors point out the graphics ("…see figure 12-5…"), but here it did not occur to her. She had not transferred this valuable L1 reading strategy to her L2 reading.

The task asked for a comparison of a German news article with an American one on the same topic. Since Gail did not find anything on the CNN website on the construction of the holocaust monument, she chose another article on the *Deutsche Welle* site which she assumed would be found on CNN, an article about a press conference that Bush gave

on the Iraq war. Although she had said that politics was not her favorite topic, she understood this article more quickly, probably because of her background knowledge of the topic. She attempted to use *word formation* as a reading strategy: "… *Vergleich* … it's something that is the same, *gleich*… Is that a verb … *gleichen*?" (The verb *vergleichen* means "to compare," which I have to tell her). But after this good start she reverted to *word-for-word* reading, and not locating the verb at the end of the sentence. In her struggle to understand the meaning of individual words, she lost the meaning of words she had asked for before ("what was *Besatzung* again?", "and you said *Bürgerkrieg* was …?"). Thus, Gail remained at a basic reading level, and did not use higher-level strategies such as *previewing the text*, interpreting *text structure*, *monitoring* her reading, or *connecting text to background knowledge*. The latter seemed to be due to her lack of knowledge, and less to her lack of that strategy. She also seldomly *summarized* text passages.

For the comparison task, she made pertinent observations about the different perspectives of the American versus the German article. This shows that her difficulty is not so much about general incomprehension of political texts, but the lack of linguistic knowledge to correctly assign meaning to individual German sentences. Asked what the difficulty of this task was, she mentioned her lack of vocabulary. She did not mention a difficulty with grammar, although that was obvious from the think-aloud protocol. The result for Task 3 was 2.6 out of 4.

Gail's strategy use in Task 4 (Translation)

For her translation task, Gail chose a website about water polo, since she played that sport herself. She tried to translate the text word-for-word, but again showed a lack of basic linguistic knowledge: for example, she was not familiar with the name of the commonly occurring letter *ß* ("ess-zet"). She also had considerable word recognition difficulties. When she looked for water polo through the *search function*, she spelled the German word *Wasserball* as "wasser ball", with no results. (It is a basic rule in German that nouns are capitalized, and that compounds are written as one word.) Lack of knowledge of this basic rule made online searching for concepts difficult and time consuming. She again had to *ask for the meaning of many unknown words*, and again forgot words she had just asked about ("His team, *kämpft, kämpft* is what? I, I like, always forget this one").

Although she was able to *make inferences* due to her background knowledge of the topic, this was not sufficient to understand the text adequately. She seemed distracted which might be due to the fact that she had an exam after the reading session. Her observations of the structural differences between German and English, as seen in the online translations, remained very superficial.

Gail achieved a score of 2.75 out of 4 in this task.

Helen

Helen was in her 6th semester and majored in International Security and Conflict Resolution. She used the Internet once a day, for email and searching for information. She sometimes read German Internet pages, for example Germany's Yahoo page and

some German university sites. She seemed to have a connection to Germany through personal experience. She explained her motivation for learning German in the following way: “I love the country and it’s good to know multiple languages for my major.” Her interests were with both the culture and the language, but more so with the language, which is uncommon. Her topics of preference were “Stereotypes,” “Multicultural Society,” “Communication,” and “Leisure Time.” Sometimes she read German magazines or newspapers outside of class. She also named a specific aspect that interested her in the German culture, i.e. “their stereotypes of other cultures.” As far as the language is concerned, she was amazed to find that there were “so many different ways to say one thing.” She expected a better understanding of sentence structure in everyday oral language from work with German websites. (This aspect of everyday language, as opposed to the more formal language of textbooks, was mentioned by other students as well.) As for the difficulties she expected to encounter on those websites, she mentioned “not knowing or understanding certain words.” As far as the think-alouds were concerned she expected to learn about her own thought processes. This showed an interest in her strategies and learning, and was corroborated by her unusually strategic reading.

Her level of German was rated by the classroom teacher as 2-3 in her general language ability (1 = higher, 2 = medium, 3 = lower), and 3 in her reading. This is exceptionally low.

Helen's strategy use in Task 1 (Trip to Germany)

Helen showed motivation in the reading tasks. It was apparent that she liked to learn German. She had gone to Germany before, and was interested in specific aspects of the language, which was evidenced when she tried to learn new words while doing the tasks. She also had good pronunciation. What distinguished this student within her group was her strategic way of approaching the tasks. Although her German proficiency was rated low by the teacher, she showed good search skills in her Internet reading, using the *pulldown menu* and the *side columns*. This was not done by many students, since they usually did not understand the categories in the pulldown menus, but Helen mastered this search strategy in spite of her limited knowledge of German. She *oriented herself on the websites* very efficiently, and did so consistently in all four tasks. She *tried out different links* in all four tasks, showing a facility in Internet use. She also used *scanning* and *illustrations* very intensively in Task 1, although she often did not read the text underneath the photos. For the tourism task, this strategy seemed to be sufficient. Her answers were relatively general for Task 1, but for this scanning task, that can be accepted as adequate. She often *guessed words*, and was usually correct. At one point, however, she had difficulties with the culture-specific layout of the German tourism website. There is often important information on the side columns, where American students seem to expect mostly advertisements: "What I found is kind of like these ones that normally are off to the left … Like the little clicks are just kind of like articles … That I think, well in American websites they're normally links to … like other pages and things. It's not really like the main page. So that's what I just thought …"

She obtained a relatively high mark in Task 1: 3.58 out of 4.

Helen's strategy use in Task 2 (Music)

Helen's good strategic behaviour also helped her in Task 2. She became emotionally engaged when she recognized song titles, saw interesting pictures or when she learned something new. She liked the layout of this webpage and called it "new age." Her good reading strategies were evident when she *skipped unknown words* or passages, *guessed unknown words* and made an unusual number of *inferences* about the type of music of one of the artists: "Um, I'm guessing … she sings pop music. I'm guessing, um, from the name of the song, and by the picture. And also by … it says that she was like in the top 30 UK charts? And pretty much that's always like pop music." However, sometimes she *read too fast* ("I think I need to read them slower") or *clicked too fast* ("Yeah, I pushed 'Go' thinking that it would take me to a song, but I think it took me to eBay instead"). She often only read the first part of the sentence, missing important information in the second part ("I didn't even read that part. I stopped at *Fußball*.") Thus, an efficient strategy carried over from English did not work with German. Consequently, she was good at finding the gist of texts and asking only for the keywords, but would need to read more carefully and to use *grammar* more frequently to understand details. Despite all these weaknesses, she achieved 3.8 in the music task, based on her excellent strategic behaviour.

Helen's strategy use in Task 3 (*Deutsche Welle*)

The situation changed in Task 3, where closer reading and detailed understanding were important. Now her linguistic weaknesses became apparent, especially her lack of

pertinent vocabulary. Her background knowledge was also much less developed in this field (politics) than it was in music. Thus, it was more difficult for her to apply reader-based strategies. Even in the English texts, she made mistakes understanding the facts. She often needed my help for confirming her *guesses* or *repairing* wrong readings. She used *cognates* to *guess unknown words*, but sometimes interpreted them wrong. She did not use *word-formation* for understanding unknown words, or *grammar* to understand sentences. Here, the difference to high- and medium-performance strategic readers becomes apparent. She did, however, *evaluate guessed words*, a strategy that only very few students, and usually the linguistically strong ones, used. Interestingly, she did not use *word-for-word reading*, a strategy that most linguistically weak students go back to (cf. Gail). When she *asked about unknown words*, she asked only about keywords, which showed that she understood the general structure of the text. She even made an observation about the *text structure* (different parts of the text were written in different fonts), which was very unusual for the students in general. She also connected the text to what she had learned in the classroom before, a very helpful learning strategy. The comparison of the two texts was mainly made on the basis of her *background knowledge* (stereotypes), not on the texts themselves. Nevertheless, she was interested in the task and made a conscious effort to learn new words by repeating them. This is an example of a student whose course performance and strategic reading as well as motivation to learn seemed to be incongruent.

In Task 3, Helen was only able to attain a result of 2.3 out of 4.

Helen's strategy use in Task 4 (Translation)

In Task 4, Helen chose a political text (Iraq) and understood it quite well, but not in the details. Her translation was a bit free, but generally correct. She *asked for the meaning of many unknown words*, also quite basic ones or *cognates* ("Um, what's *Soldaten*?"). When doing the comparison of German and English, her analysis showed a lack of *grammatical* awareness and grammatical terms ("They do it in different sentence structures than we learn"). She recognized the problems with the translations in a general way, but was not able to explain them linguistically.

Helen achieved a score of 2.75 out of 4 for Task 4.

Ian

Ian was a psychology major, in his 4th semester. He used the Internet two to three times a week, for games, search for information, and email. He claimed to have good computer search skills, and this could be confirmed during the sessions. He had read German texts on the Internet, on German hip-hop groups like *Freundeskreis* or *ABS*. His topics of interest were "Music," "Leisure Time," "Multicultural Society," and "Stereotypes." He was more interested in the culture than in the language. His expectations for doing sessions on the Internet were that he would learn to read German websites better. He expected that vocabulary and site directions would be the most difficult thing while reading German Internet pages, and thereby showed that he had some experience with this text type.

Ian's course performance was evaluated by his professor as level 3 in general language skills (1 = higher, 2 = medium, 3 = lower), and also level 3 in reading comprehension. This positioned him as the linguistically weakest student in the group.

Ian's strategy use in Task 1 (Trip to Germany)

Ian oriented himself quickly on the websites; he obviously had experience searching the web. Since he had lived in Germany as a middle school and high school student on an army base, he was familiar with German culture, and recognized many locations on the tourism site. He made ample use of *connecting the text to background knowledge*, even to the extreme of barely reading the texts. He used the texts and *illustrations* as starting points for his own reminiscing. When he read short passages, he often *guessed unknown words* (albeit sometimes too quickly) and did not often *ask about unknown words* from the researcher. He mastered the strategy of *scrolling* and he used the *pulldown menu* and *side columns*. He also *used illustrations* for information, and *used an icon* for choosing the English language for a text, rather than the word "English." He seemed to be a visual learner, and confidently *tried out different links*. On the other hand, he did not *make inferences* very often. He sometimes had difficulty recognizing words adequately. For example, he read "*während ... Mann* … while 'man' … while 'one'?" confusing *Mann* (man) with the pronoun *man* (one).

After quickly finishing Task 1, he stayed an additional 10 minutes and searched for things he remembered. It seemed to be a nostalgic trip back to happy years, and he became quite emotional. Probably because of his prolonged stay in Germany, his pronunciation was good, and he also knew quite a few everyday German expressions.

However, his knowledge of formal German was weak, which confirmed his teacher's assessment of his language ability. Nevertheless, he obtained a good result for the tourism task: 3.25 out of 4.

Ian's strategy use in Task 2 (Music)

As in Task 1, Ian maneuvered skillfully on the music website. His knowledge of German pop music was impressive. Since he played in a band himself, he had met a few of the German groups. Added to this knowledge of the contents, he showed very good computer search skills. However, he trusted too much in this ability, and again hardly read the text, or, if he did read it, he read it too *fast and without attention to detail*. He only *scanned* the text for information, but was able to do so surprisingly well. When he formulated the summaries, it almost seemed that he had read these texts before, or else he had very good *skimming* skills. He also *used cognates* for comprehension. Although he showed frequent *avoidance* by talking about his own experiences rather than reading, he obtained a result of 3.4 out of 4 in Task 2.

Ian's strategy use in Task 3 (*Deutsche Welle*)

With respect to Task 3, Ian said that he did not know much about the topic. He explained that he would not select a news website to read if he were to choose a topic independently of the task. But once he started on this website, he applied good strategies: He read the *titles*, looked at the *illustrations* and *skimmed* the articles, thus becoming able to answer the questions, including the *evaluation* of the two types of articles. He also engaged in *word-for-word reading*, but he hardly ever *summarized* the articles, and it was

difficult to know how much he actually understood. He *subvocalized* the texts when they became difficult. He also *read* the English article on CNN rather *fast and without attention to detail*. When he spoke of himself, it was often somewhat derogatory. However, Ian used one reading strategy not employed by any other student: He read the first sentence of each paragraph. In this way, although he did not seem to *read with much attention to detail*, and although his language performance was low, he achieved a result of 3.25 out of 4, which is high for this group of low language performance students, and for this task.

Ian's strategy use in Task 4 (Translation)

For Task 4, Ian chose a website and a topic which he already knew (soccer), and went through the task very quickly. He did not seem to be very interested in this task, since he chose to read the third paragraph of the text, mainly because it was the shortest paragraph, and he did not read the first two paragraphs to understand the overall context. He critiqued himself as "I just get lazy." Nevertheless, after having asked for many words in this short text, he achieved an adequate translation, and found some linguistic differences between German and English. This student seems to be rather contradictory. Although he claimed to be "lazy," he started to play a question-and-answer game on the German tourism website, even though this did not belong to the task, and he was not able to use it for his answers. He seemed to be genuinely interested in *trying out different links* and learning new things, though not necessarily in the way the academic school environment expected of him.

In Task 4, Ian obtained a result of 2.33 out of 4 points.

To summarize, the three lower-performance students showed quite different results. Gail had considerable comprehension difficulties because of her weak vocabulary and grammar knowledge. Her language level was too low to apply reader-based strategies such as *guessing unknown words* or *making inferences*. She furthermore was not able to *use background knowledge* to help her construct the meaning of the text. On the other hand, the other two low-performance students, Helen and Ian, achieved results that were comparable to the medium-performance group in Tasks 1 and 2. Knowledge of the topic and "easy" reading modes, *scanning* and *skimming*, seem to account for this result. Reading and problem-solving strategies were more important for getting answers than linguistic knowledge. In Task 3 the differences became more notable, since lacking language skills led to unsuccessful use of text-based strategies.

To conclude this section, Table 5 presents the three focal students' reading strategies used in Task 3, where the first five represent general strategies and the next four represent Internet-specific strategies. Only the nine most-used strategies are shown; the complete list of strategies for each student is given in Appendix 8.

Table 5: Example of focal students' use of reading strategies in Task 3

Frequency of the nine most-used strategies: Five general, four Internet-specific.
X = one observed occurrence

Andy	Word-for-word reading	XXX
	Guessing unknown words	XXXXXXXXXX
	Connecting text to background knowledge	XXXXXXXXXXXXXXX
	Making inferences	XXXXXXXXXXXXXXXXXX
	Asking about unknown word	XXXXXXXXXXXXXXX
	Scrolling	XXX
	Using search button	X
	Reading very fast, inattentively	XXXXX
	Avoidance	
Doris	Word-for-word reading	
	Guessing unknown words (not always correctly)	XXXXXXXXXX
	Connecting text to background knowledge	XXX
	Making inferences	XXXXXXXXXXXXXXXXXX
	Asking about unknown word	XXXXXXXXXXXX
	Scrolling	XXXXXX
	Using search button	XXXX
	Reading very fast, inattentively	X
	Avoidance	X
Gail	Word-for-word reading	XXXXXXXXX
	Guessing unknown words (often incorrectly)	XXXXXXXXXXX
	Connecting text to background knowledge	XX
	Making inferences (not always correctly)	XXXXXXXXXXXXXX
	Asking about unknown word	XXXXXXXXXXXXXXXXXXXX
	Scrolling	XXXXXXX
	Using search button	
	Reading very fast, inattentively	XX
	Avoidance	XXXX

As the table shows, the lower-performance student used word-for-word reading considerably more than the other two. All students engaged in *guessing unknown words*, but the medium- and lower-performance students do not do so always successfully. There is a significant difference in *connecting text to background knowledge*, where only the high-performance student is efficient in this strategy. The reader-based strategy *making inferences* is used significantly less by the low-performance student, and not always successfully. In contrast, the low-performance student *asked for* a considerably higher number of *unknown words*. *Scrolling* was used more by the weaker students, perhaps due

to the fact they did not easily find text passages that they comprehended. In Task 3, which required detailed reading, *scrolling* was not an effective reading strategy. Würffel (2006) interprets *scrolling* in some situations as a relief strategy when frustration sets in. The Internet strategy of *reading fast, inattentively* was used, contrary to expectation, mostly by the high-performance student. This was confirmed in his other readings as an individual working style of this student, and not otherwise typical of the high-performance group. Finally, the lower-performance student showed a greater amount of *avoidance* strategies, for example, she chose the first article she found without looking at other articles, she was easily content with the information she found, and did not search further, and expressed that she would have given up reading this article had she been on her own.

In the next section, I analyze the success in completing the tasks as reflected by the task scores in more detail.

4.2 Task scores

This section analyzes the task scores in relation to course performance levels. As can be seen in Table 6, task completion seems to be strongly associated with reported class performance levels.

Table 6: Overview of students' task scores

Name	Task 1 (Trip) *out of 4*	Task 2 (Music) *out of 4*	Task 3 (*Deutsche Welle*) *out of 4*	Task 4 (Translation) *out of 4*
Higher course-performance students				
Andy	3.50	3.80	4.00	3.75
Bernhard	--	--	4.00	3.75
Chris	3.67	3.20	3.00	3.25
Medium course-performance students				
Doris	3.75	3.50	3.50	3.67
Ellen	3.52	3.85	3.60	2.67
Franka	3.50	3.40	2.33	2.75
Lower course-performance students				
Gail	2.60	2.50	2.50	2.75
Helen	3.58	3.80	2.30	2.75
Ian	3.25	3.40	3.25	2.33

As a general trend, the results of the tasks corresponded to the students' course performance as evaluated by the teacher. That is, on average the best three students (Andy, Bernhard, Chris) achieved good results in the reading tasks (average across all tasks of 3.64); the medium students achieved medium results (average across all tasks of 3.34), and the weaker students obtained lower results (average across all tasks of 2.92).[17] However, Doris, a medium-performance student, achieved higher marks in some tasks than high-performance students for the same tasks. Thus, there must be other factors involved in successful task completion besides general course performance level.

[17] The differences are not very large between groups, probably due to the fact that all students were able to ask me about unknown words. One can assume that the difference between groups would have been greater had the students been completely on their own.

Furthermore, there were considerable differences within each performance group. Andy and Bernhard obtained the high results that were expected of this group. They used higher-level strategies such as *guessing unknown words*, *evaluating guessed words*, *using text structure* to interpret the meaning of a text, and *evaluating the contents of texts* (see Appendix 8. Synoptic tables). Chris, on the other hand, was surprisingly weak in Tasks 2, 3, and 4. His results were lower in some instances than those of the medium-performance students. An analysis of Chris's strategies indicates that this can be attributed to Chris tending to *read very fast* and often *without attention to detail*. He did not always take the time to recognize words correctly, often misread them, did not *monitor* his reading, and consequently misunderstood parts of the texts. Thus, even though Chris performed very well in the course overall, his weakly developed reading strategies and less than efficient problem-solving style conspired to reduce his final results below his capability. This was especially apparent in the *Deutsche Welle* task (Task 3) which required detailed reading.

Doris, on the other hand, a medium-performance student, had final results on the research tasks that were among the highest of all three groups. The result in Task 1 (Trip to Germany) is easily explicable by her high interest in traveling to Germany. With respect to Task 3 (*Deutsche Welle*), her result is somewhat surprising, since she had serious linguistic problems in this task. For example, she was not able to parse compound words into their components, and she did not recognize the past tense in the political article. Nevertheless her good reading strategies compensated for her lack of vocabulary and grammar, and her high motivation to understand the text made up for her lack of content knowledge.

Ellen, as a medium-performance student, is in the middle range with her task results, and therefore corresponds to expectations. She used *guessing* and *inferring* strategies, even interpreting the *website structure.* Due to her lack of vocabulary and weaknesses in grammatical understanding, she did not always obtain correct results with these strategies.

Franka, although evaluated by the teacher as a medium-performance student, showed considerably lower task results than the other students in her group, Doris and Ellen. This can be explained through a combination of a lack of grammatical knowledge and weakly developed reading strategies. She thus did not have the opportunity to compensate for linguistic weaknesses. Similar to Chris, her somewhat careless problem-solving style added to her limited comprehension of the texts.

Gail, a low-performance student, showed the lowest task results, due to her low linguistic aptitude and her underdeveloped reading strategies. Her difficulties were mainly with vocabulary. She asked for an exceptionally high number of unknown words, and her deficits in this area were so serious that they could not be compensated for by reading strategies. She also had difficulties with pronunciation. Since this phenomenon also occurred with Helen, one can infer that the ability to pronounce unknown words correlates with reading comprehension. Furthermore, Gail did not have a command of German orthography rules, for example concerning the capitalization of nouns. When she did recognize nouns, she did not have a grammatical concept of what function nouns have in sentences. Recognizing and identifying parts of speech is one of the most basic but very helpful strategies in understanding the meaning of a sentence.

Helen, another low-performance reader, had quite good results for Tasks 1 and 2, but lower ones for Tasks 3 and 4. This corresponds to her reduced interest in politics as compared to travel (Task 1) and music (Task 2), and to a serious lack of vocabulary and background knowledge for political topics. Her relatively high results for the first two tasks can be attributed to good strategic reading, where missing linguistic knowledge could be compensated for by well-developed reading strategies. This compensation was not possible, however, with Tasks 3 and 4, where her lack of linguistic and content knowledge as well as the complexity of the texts precluded the application of reader-based strategies.

Ian was another case where task results did not coincide completely with his linguistic ability. He was the weakest among the group of low course performance students according to his teacher, but he achieved results of a medium-performance student. In analyzing his use of strategies, I noticed that, on the one hand, he did not use text-based strategies successfully. For example, he had problems with word recognition and grammar. On the other hand, he had very good knowledge of German music, and used this knowledge to make inferences in texts that were linguistically above his performance level. As a consequence, he achieved good results in Task 2 (Music). He was not as successful in Task 3 (*Deutsche Welle*) where he was required to perform more detailed reading, and where linguistic proficiency was of greater importance. But even here he was in the medium group with his results, possibly due to his good Internet search strategies.

The unexpected results in some of the above cases could be explained by individual differences in skill levels. Some students might master problem-solving skills better than

grammatical analysis or the application of learned grammar rules. This corresponds to an interesting finding by Anderson (1991), who reported that language proficiency correlated positively with reading-test results, but not with reading comprehension efficiency. Reading comprehension comprises different skills from purely linguistic ones. Reading comprehension is dependent to a greater degree on the efficient use of strategies.

Additionally, there were factors which emerged through the analysis of the protocols which could also explain the unexpected task results, such as motivation and background knowledge. The factors which had an influence on the use of reading strategies and consequently on reading success are detailed in Section 4.3.

4.3 Factors influencing reading success and the use of strategies

The following factors emerged during the analysis of the protocols (see Appendix 8). They influenced the students' use of reading strategies and their reading success in the four tasks:

- course performance (4.3.1),
- background knowledge (4.3.2),
- motivation (4.3.3),
- strategic competence (4.3.4),
- computer skills (4.3.5),
- problem-solving style (4.3.6),
- the Internet as medium (4.3.7), and
- the type of task (4.3.8).

These factors are described in turn below.

4.3.1 Course performance

Looking at the synoptic tables of the strategies used by students of different performance levels, one can observe certain tendencies. In the text-based strategies, the high-performance students often used *word formation* to guess the meaning of unknown words. Surprisingly, so did Gail, a low-performance student. Gail seemed to have learned this strategy well, although her overall language performance was rather low, and her reading was otherwise not very successful. *Analyzing grammar*, i.e., noticing sentence structure and using it to comprehend the meaning of sentences, was used by all of the students at some point, but more so by the high-performance students. Bernhard, who is a very conscientious high-performance reader, used this strategy most. Andy, who according to his pre-session questionnaire is interested in the language as such, also used *grammar* explicitly to comprehend text passages. High-performance students also used more *background knowledge*, and this in turn facilitated their reading greatly, especially in Task 3 (*Deutsche Welle*), where political knowledge was crucial for understanding the complex texts. All three higher performance students excelled in this respect, whereas the medium and lower performance students all showed very little awareness of politics, and often mentioned that they did not have enough political background knowledge to understand the texts adequately.

Course performance was also associated with the Internet reading strategies of c*licking to other links because of personal interest* and *clicking to other links because of task requirement*. Both strategies are used by students at all performance levels. However, *clicking because of task requirements* was used more by students at the (estimated) lower end of course performance, whereas stronger students showed more

clicking due to personal interest. Before making any evaluations of this behaviour, however, it is necessary to observe both strategies together. Helen and Ian, both low-performance students, clicked extensively because of their personal interest in Tasks 1 and 2. Thus, in these tasks the difference between the performance groups as estimated by the teacher is not significant. In Task 3, however, Gail clicked because of task requirements much more (eleven times) than because of personal interest (three times). This leads to the supposition that with complex tasks, weaker readers do not have enough confidence to let themselves be guided by anything but the task requirements. Task requirements may overwhelm weaker readers so much that they cannot follow their own interests. Another strategy which lower-performance readers used was *clicking because of a known word*. They did not understand the whole link but chose it because they recognized one or two familiar words. Gail realized this as she answered questions in the interview:

> You know, like sometimes when you're just like 'okay choose this' I just kinda look down and go 'oh that's interesting I don't really know what that is, click'. You know, so...probably sometimes I didn't <u>really</u> know what I was getting into and I'm like okay, I understand two words out of the sentence, looks interesting, I want that.

Making inferences was used by all students, but with very different degrees of success. The higher-performance students used it when they knew a topic well and used that information to make the text comprehensible to them. This was the case especially for Andy and Bernhard, and especially with respect to Task 3 (*Deutsche Welle*). Inference was necessary for this task because both the linguistic and text structures were difficult and beyond the language level of even the higher-performance students. Thus, they

complemented their lack of linguistic knowledge by using their own background knowledge to infer the meaning of text passages. These students also made judgments about the adequacy of a guessed word (*evaluating guessed words*). However, with lower-performance students lacking a solid linguistic basis, the inferences were often uninformed, that is, not based on either text features or background knowledge, and therefore often wrong. This was the case especially for Helen and Ian in the lower-performance group, but also for Chris, who was otherwise a higher-performance student.

The metacognitive strategy of *evaluating contents* was utilized particularly intensively by the higher-performance readers, as it is closely related to background knowledge and interest. Thus, Andy and Bernhard used this strategy frequently in Task 3, as did Chris in Task 2. Bernhard even evaluated the style of the political article, which showed exceptionally profound background knowledge as well as metacognitive awareness.

Monitoring alludes to a general awareness by students of their use of reading strategies, and is usually combined with an evaluation of their own reading process (Würffel, 2006). It occurred rarely and only with Bernhard, shown to be a very strategic reader, and Ellen, who, among the medium-performance group, had the greatest awareness of her reading process. None of the lower-performance students used this monitoring strategy, which suggests that one has to have reached a certain language threshold in order to control the process itself, or to carry over such metacognitive strategies from L1 to L2 reading. The lower-performance students were likely too occupied with deciphering lower level text features such as words and sentences to be able to apply this metacognitive reading strategy. In a similar way, using an online

dictionary adequately seems to require a certain language threshold. Although it was not used often since the students were allowed to ask me for vocabulary clarifications, some students did use it. The weaker students had difficulties selecting the correct reading of a translation (Ellen), whereas higher-performance students used online dictionaries successfully (Bernard).

To summarize, certain strategies were mainly found with higher-performance students: *using grammar* for text comprehension, *connecting text to background knowledge*, *monitoring* the reading process by *clicking on links according to personal interest*, *making inferences*, and *evaluating contents*. As expected, higher-performance students had the best reading comprehension results. However, when higher-performance students used unproductive strategies such as *fast and inattentive reading*, it diminished their comprehension considerably. Medium-performance students were able to compensate for their linguistic deficits to a certain degree through higher-level strategies. Doris, for example, used *monitoring* and reader-based strategies, which resulted in text comprehension that was better than that of some higher-performance students (Chris), whereas lower-performance students used fewer monitoring and reader-based strategies. If they did, it led to better comprehension with linguistically and conceptually simpler texts and through scanning and skimming tasks (e.g., Helen in Tasks 1 and 2). One could assume that their proficiency level was not high enough to allow them to use reader-based strategies with more complex texts or detailed reading tasks.

I describe the factors that could compensate for a lack of linguistic proficiency in the next four sections: background knowledge, motivation, strategic competence, and computer skills.

4.3.2 Background knowledge

As shown in the previous section, *connecting the text to background knowledge* made a significant difference in students' reading and understanding of the texts. It was evident that the higher-performance students Andy and Bernhard had a great advantage through their solid background knowledge, which was especially significant in Task 3 (*Deutsche Welle*). Subject knowledge made a significant difference for the application of reader-based strategies such as *guessing unknown words*, making *inferences* and *orienting oneself on the webpage*. Both Andy and Bernhard combined linguistic performance and background knowledge, whereas Chris had less political background knowledge, which prevented him from using inferencing strategies and led to unsatisfactory comprehension of the text. The medium- and lower-performance students possessed much less political background knowledge and world knowledge, which kept them from guessing unknown words or making inferences. Doris, for example, was not aware of the existence of smuggling exotic plants from South America, and therefore was not able to guess the meaning of the cognate *Pflanzen*. The same occurred with an article about a Jewish magazine in America during World War II, or one about the war in Lebanon 20 years ago. Since she did not understand the context, she could not use *guessing* and *inferencing strategies*. Similarly, Gail did not know enough about the Second World War to deduce the meaning of *Juden* (Jews) in an article about the holocaust.

Medium- and lower-performance students had more opportunities to use their background knowledge in the tourism and music tasks. For example, Ian showed a good knowledge of German regions and customs due to his long stay in Germany as a youth,

and he had very profound knowledge of the German music scene. This helped him navigate both the tourism site in Task 1, and especially the music website in Task 2. Here he always *monitored* his reading successfully. However, he used his background knowledge too exclusively, and his subsequent *making inferences* was too hasty and led to misunderstandings. The case was different for Task 3, since he did not have sufficient background (or linguistic) knowledge for this topic. In the same way, Doris, although very motivated, had no familiarity with political texts, and had comprehension difficulties with the *Deutsche Welle* texts.

Evidently, background knowledge reinforced good linguistic knowledge of the higher-performance students and enabled them to apply higher-level strategies such as *making inferences*, but it only helped lower-performance students with linguistically simple texts and tasks. Background knowledge is not sufficient to compensate for linguistic deficits in linguistically complex and conceptually abstract texts.

4.3.3 Motivation

Motivation proved to be an important factor for reading success. Personal interest guided the students' searches, their *clicking on links* and thereby *monitoring their* reading, and also their comprehension of texts. For example, the higher-performance student Andy was highly motivated to learn German, which was evidenced by his insistence on speaking German during the session. As for the effect of his motivation on his reading strategies, he showed great initiative in searching for information, and *clicked to different links* often during Task 1 (Trip to Germany) because of his interest in Reutlingen (*Ich bin neugierig* "I am curious"). His motivation was heightened by his plan

to study there during the following year. This extensive clicking led to a large amount of information. He did the same for Task 4 (Translation), since the text was of personal interest to him (*Schwarzfahren* - traveling without paying the fare in the local transit system): His strong motivation also led him to do more *summarizing* of text passages than other students, and to *evaluate the contents of texts*. Motivation led Chris, one of the other higher-performance students, to use the strategy of *clicking because of personal interest* in Task 1, and also extensively in Task 2 (Music). Clicking because of personal interest can be seen as intrinsic motivation, and clicking because of task requirement can be interpreted as instrumental motivation. The former, which, as we have seen is also often related to high course performance, leads to more extensive, deeper, and more successful reading. But intrinsic motivation also occurred with low performance students. For example, Ian showed a profound knowledge and personal interest in music, and thus applied reader-based strategies like *scanning, guessing unknown words, using illustrations*, and *connecting text to background knowledge* to his advantage. This finding corroborates Grabe and Stoller (2002), who say that personal goals and attitudes guide the comprehension of a text.

Because of intrinsic motivation, students also used the strategy of *relating text to personal experience* to a large extent, often due to their heritage background (Ellen, Franka). In several cases, students were motivated by their personal interest and motivation to read more than the task required. For example, Ellen explained what her sister had seen while traveling to Trier, and tried to find out more about this city. Her high motivation led her to click on several more specified links where she read texts that

were not required by the task. In the same way, Doris expressed a high interest in Internet texts:

> Just … you know, new words, and new topics, maybe topics I could relate to better? Because they are not from the textbook, and …just …. maybe like reinforcement outside of class. So … I really liked it.

This motivation helped her overcome vocabulary and grammar difficulties. Her motivation was paired with strategic competence, for example *using illustrations* in order to understand otherwise incomprehensible texts:

> Yeah. I mean, 'cause then if you're not sure, it totally tells you what it is, like a picture is worth a thousand words, or whatever? So … yeah (*laughs*).

In the case of Ellen and Ian, *relating to personal experiences* motivated extensive narratives about their experiences in Germany. Ellen concentrated on one event (her being part of a dance group on a tour), and Ian narrated so extensively about his experiences as a high school student in Germany as well as having his own band there, that his narratives replaced the actual reading, and thereby constituted an *avoidance* strategy. Personal attitudes also played a significant motivating role in Task 3, where students had to compare a German newspaper article to an American one. Here students often made judgments more on the basis of their preconceived notions of German versus American newspaper writing than on a detailed reading of the text. Thus, their solution of the task was primarily *reader-based* as opposed to *text-based.*

Another strategy influenced by motivation was *comparing L1/L2 and C1/C2*, i.e. comparing first language and second languages, and also their own culture C1

(American) to the target culture C2 (German). In Task 3, students were requested to compare the German and American ways of presenting the news. Doris achieved a good result in this task through her highly motivated and detailed comparison of two articles about the Iraq war. Ellen used it in Task 1 (Trip to Germany) and Franka used it in Task 2 (Music), where it was not required. Here, the use of this reader-based strategy can be attributed to motivation and intrinsic interest in aspects of the German culture.

Gail's comments on the difference between Internet reading and traditional classroom reading suggest that Internet reading might be generally more involved and therefore encourage more varied reading strategy use:

> With textbook text it's more of a, like, 'I'm gonna get quizzed for it' type of deal, um, versus, like a website it's more like, now I have more freedom, I can pick out what's my interest and I'm not being forced to read this and this and this, I can kinda, branch off a little and decide what's more interesting to me and learn about that, so, that's why I would read it differently, probably with more interest, rather than...

To summarize, motivation influenced successful reading by intensifying the students' web searches. Motivated students clicked on more links, and therefore found more information. They related the texts more to their personal experiences and motivated them to engage in reader-based strategies such as *connecting text to background knowledge* and *comparing* what was found in the text to their own culture. The openness of hypertexts offers the opportunity to follow a strong motivation and to read more texts more profoundly. Motivation thus makes a significant difference in how much and how well students read on Internet pages.

4.3.4 Strategic competence

The difference in students who made use of different reading strategies and those who were not able to do so efficiently was significant. Looking at the general strategy use evidenced in the protocols, the higher-performance students in general used strategies more successfully, both at the text-based level (e.g., using *word-formation* or *grammar* to comprehend a text) as well as the reader-based level (e.g., *guessing unknown words*, *making inferences*, *relating text to personal experiences, evaluating texts*). Medium-performance level students were able to use reading strategies efficiently with Tasks 1 and 2, but less with Task 3. Doris, for example, had problems with *word formation* (compound words) and *guessing the meaning of unknown words* in the *Deutsche Welle* article, and reverted to *word-for-word* reading, making her reading slower and less successful. The strategy of *translation* was used mostly in connection with *word-for-word reading*, primarily by lower-performance readers (Franka, Gail). However, Chris also engaged in *translation*, although his German performance is high. He seemed to use this strategy to stay focused on the text, so that translating might be an efficient focusing strategy at times. When used to translate a text word-for-word, however, as done by Franka and Gail, *translation* is not strategically efficient. In the case of Gail, low linguistic performance correlated with a lack of strategic competence. She hardly ever *guessed an unknown word* (and there were many), and preferred to ask for each word she did not know. Her low linguistic ability might have precluded her from guessing unknown words because she did not have enough comprehensible context, or her low linguistic level resulted in low confidence, and thus kept her from guessing. Her underdeveloped strategic competence in the L2 showed itself as well when she did not

use illustrations to aid text comprehension. She was too involved with her text difficulties to even notice the illustrations. In a similar way, she did not *relate the information in the text to her personal experiences*. This again echoes findings in the literature that a certain level of linguistic competence in the L2 must be achieved before a strategic competence can be successfully transferred from L1 to L2 (Barnett, 1989; Clarke, 1988; Eskey & Grabe, 1988).

There were two notable positive exceptions in the medium- and lower-performance groups. Ellen and Helen were strategic readers, independent of (or in spite of) their linguistic level. Their L1 Internet reading and monitoring strategies appeared to carry over to L2 reading, against the prediction that only students with a certain level of language proficiency will be able to do this. Ellen, a medium-performance student, used good guessing strategies but was at times too quick with *clicking*. She showed good strategic behaviour, but would have to train this to make it more consistent in order for her to obtain above average marks. Helen, a lower-performance reader, had expressed in the questionnaire that she wanted to know more about her way of learning through the think-alouds. This consciousness of her own learning processes correlated with her strategic reading. She was in fact able to compensate for some of her linguistic weakness by good reader-based strategies. For example, she was the only student who observed a feature of *text structure* by mentioning the different fonts that were used to convey some types of information, and which helped her interpret this information. She was also one of only two students (besides Bernhard) who used the monitoring strategy of *evaluating guessed words* more than once outside of Task 4. In this way, Helen achieved very good results in Task 1 and especially in Task 2. On the other hand, this advantage did not help

her with complex texts such as reading political articles in Task 3. She did not have enough background knowledge to apply reader-based strategies such as *guessing unknown words* and *making inferences* successfully. Interestingly, this deficit also kept her from using text-based strategies such as using *word formation* to deduce the meaning of unknown words or *grammar* to interpret sentences, both probably due to the linguistic complexity of the text. However, she did display more strategic competence in this task than the other lower-performance readers. For example, she used *cognates,* performed *skimming, using illustrations, relating text to classroom learning, making inferences, summarizing, skipping, evaluating guessed words, repair* and *going back and forth on the website,* but it was not enough to adequately understand a text of this difficulty. This corroborates findings in the literature that compensation of low language proficiency through good reading strategies is possible only to a certain degree (Bernhardt, 2002; Clapham, 1996). My study shows that the complexity and abstractness of the texts prevents weaker students from using strategies efficiently more so than low linguistic level.

Strategic competence has special relevance for Internet reading. In contrast to traditional linear text reading, one must construct one's own hypertext on the Internet by clicking on different links to find the information one is looking for, especially when it cannot be found on the original website. The strategy of *trying out different links* is comparable to skipping paragraphs and looking for information in other parts of a book (in traditional reading). In this way, it is a strategy that implies risk-taking. With regard to Task 1, this strategy is task-dependent because the students had to find information about Germany on different levels of the tourism website. But even here, it was not used by all

of the students. The more confident readers (Andy, Bernhard, and Chris) used it often, but in the other groups only Doris (for Task 2) and Ian (for Task 1) used it to any great extent. The use of this strategy helped these two students obtain relatively high results in Tasks 1 and 2, whereas other students' linear reading was less efficient.

Summarizing, my study shows that strategic competence is in most cases related to high and medium course performance (as estimated by the teacher). Efficient strategic reading can make a significant difference in reading comprehension and to a certain degree compensate for linguistic deficits. This is also true for students with a lower performance in class, if the texts are not too difficult linguistically. Furthermore, my findings support N. J. Anderson's (1991) conclusion that it does not depend so much on which strategies are used and how often, but on how they are used. With respect to Internet reading, it is important to be able to construct one's own text, and therefore *monitoring strategies* have more relevance. Mainly because of confidence and willingness to take risks, higher-performance students have an advantage by *clicking because of personal interest* more often. However, lower-performance students can often compensate for their language difficulties with strategic Internet behaviour. This corresponds to N. J. Anderson and Vandergrift's (1996) finding that the use of *metacognitive strategies*, here identified as Internet planning strategies, determines reading success. For language instruction, it is a place where weaker students can compensate for lower language proficiency and build confidence with strategic competence.

4.3.5 Computer skills

This generation of students does not have problems using the Internet in general, but some students stood out as being especially computer savvy, in particular Chris, Doris, Ellen, Franka, Helen and Ian. Computer skills did not always correspond to course performance. The students with good computer skills were not always the better readers, but good computer skills did balance out some of the linguistic difficulties of weaker students. For example, Ellen, Franka and, above all, Helen, used Internet features like *icons*, the *search button*, the *pulldown menu* and the *side columns* to a great extent, and thus were able to find useful information in Tasks 1 and 2 quickly and efficiently. Doris and Franka, two medium-performance students, used *highlighting text on the website* to mark important text passages, just as the exceptionally good reader Bernhard did. Helen was conscious of her good computer skills; on the questionnaire she had claimed to have good Internet search skills, and this self-evaluation could be confirmed in all her reading sessions. Ellen, on the other hand, had said that Internet searches "sometimes overwhelm" her, but in the reading sessions she showed good computer skills. She had searched German websites for university and tourism information before, and her cautious remark about her Internet skills was possibly due to modesty or low self-esteem. Reading results show that Ellen had very good overall task results for a medium-performance student, and Helen as well as Ian had good task results in Tasks 1 and 2, where the search process itself carried more weight than the detailed reading.

One may conclude that good computer skills, just as reader-based reading strategies, were able to make up for a lack of language skills to a certain degree in certain Internet

reading tasks. This is a pedagogical argument for Internet reading, thus giving students with good technological skills but lower language skills a chance at excelling in this area.

4.3.6 Problem-solving style

One of the surprising findings in this study is that strategy use does not depend only on course performance, background knowledge, or motivation. The think-aloud protocols show that the effective use of strategies also depends to a large extent on general learning and problem-solving style, or on a student's language learning history. This became apparent within the higher-performance group. For example, Chris had good background knowledge, like Andy and Bernhard, but was not able to apply it to comprehending the political article. When he did not know a word, he did not read the text carefully to find clues to the meaning of this word, but instead engaged in uninformed guessing. This was not due to a lack of linguistic or background knowledge, because both were good, but to his general problem-solving style. Also, due to his learning history as an exchange student in Germany, he might have felt overconfident about his comprehension and performed *reading very fast*, often *without attention to detail*. Consequently, he often wrongly *guessed the meaning of unknown words*. The same strategy can have positive or negative effects on comprehension, depending on how it is used (cf. N. J. Anderson 1991). In general, *guessing unknown words* and *making inferences* only work well with students who have good linguistic or solid background knowledge (Andy, Bernhard), and it often does not lead to the desired results when applied by linguistically weaker students (Ian), when background knowledge is not sufficient (Ellen), or when not enough effort is put into relating the guessed word to the context (Chris). Ellen, although a well-motivated

and conscientious student, often digressed too quickly from a text and concentrated on her own experiences and less on the text. This kept her from understanding some of the texts more deeply.

On the other hand, individual problem-solving styles can have positive effects on text comprehension. Doris, for example, had difficulties *guessing unknown words* because of a lack of background knowledge in the political article task, but, due to her conscientious work and perseverance in the task, her expressive ability in formulating the answers, and her good analytical abilities in comparing the two articles, she obtained relatively high marks. She always stayed focused and did not give up. The contrary was true for Franka. Although she was linguistically at the same level as Doris, her problem-solving style was quite different. She did not seem to be intrinsically motivated and often read a text too *fast* and *inattentively*, and *clicked* away from texts too *quickly*. Thus, her overall task results stayed significantly below Doris's. One can conclude that, while course performance is associated with good text comprehension, problem-solving style makes a crucial difference in task completion. Since Internet tasks require specific problem-solving skills, such as website search skills, students who master these skills have a chance at excelling, even if their language skills are not very strong. The Internet can thus help build confidence for this learner type.

Problem-solving style could also be observed with respect to the supporting strategy of subvocalizing. Several students used it when they encountered problems in their reading comprehension (Andy, Ellen, Ian), whereas Bernhard, an exceptionally good reader, did not use it at all, and Chris only once. It seems to be an idiosyncratic way of dealing with pressure, and did not correlate either with course performance or reading

success. Würffel (2006) suggests that it is used by readers as a help for remembering parts of the text.

Individual differences were furthermore observed with the strategy of *trying out different links*. This strategy was used by some students, but not by others. For example, Bernhard did not use it, and herewith differed significantly from the other higher-performance students, Andy and Chris. Bernhard seemed to go straight to the task and complete it in a focused manner. His personal problem-solving style led him to confront problems quickly and directly. Andy, on the other hand, used *trying out different links* very often. It is a risk-taking behaviour and corresponded to his style. It often brought about good search results, but at times he exaggerated it by *clicking rapidly* in Task 1, and became frustrated in his search. He did not take the time to read carefully what each click had led him to, and in the end did not find what he personally wanted. Bernhard did not engage in *clicking rapidly* at all, confirming him to be a focused and controlled reader.

When weaker students encounter problems with a linguistically difficult text, they revert to two rather opposing possibilities, depending on their problem-solving styles. They either read very slowly, word for word, or they quickly apply higher level strategies, such as inferencing and using their background knowledge. However since they do not have sufficient linguistic knowledge to make informed inferences, these inferences sometimes become wild and inefficient, as predicted by the literature (Grabe & Stoller, 2002). Franka and Ian were typical examples of these two opposing types of learners: Franka reverted to slow *word-for-word* reading, whereas Ian was more risk-

taking, hastily *guessing words* as well as *trying out different links* confidently but not always successfully.

The strategy of *evaluating a link or website* was also found to be related to problem-solving style. This metacognitive strategy refers to the evaluation of a website or a link that is used in order to complete a reading task. Most students used it with Task 4 where it was required by the task (*evaluate the online translator*), but a few students also evaluated other websites unsolicited. Doris, for example, evaluated the music website ("Charts number 12. … charts. Okay, interesting … So I think they make it fairly easy to find information."), and Ian evaluated the *Deutsche Welle* website, saying it was too difficult ("This is hard to read"), or he commented on the American counterpart: "The American article…this one's mainly about him (Bush) and Rumsfeld." Andy evaluated the tourism website when he observed that it did not really meet his search needs. Thus, evaluation strategies were distributed among all three performance levels and seem to depend on general autonomous thinking and problem-solving style.

With respect to the *use of illustrations*, one can again observe clearly that the same strategy is used differently by different students. Andy and Bernhard used the illustrations often in Task 1 (Trip to Germany) where visual information was important. They both used the illustrations on the web to guide their reading of the accompanying articles. The same was true for the medium-performance students Doris and Franka, where Doris tended to focus on pictures <u>instead</u> of reading. This strategy became even more of an *avoidance* strategy in the case of the lower-performance students: All three used the pictures to guide their work on the tourism websites (Task 1), and to answer the questions on the task worksheet, but did not read the texts about the respective regions or

events. For the purposes of the task, which required only information-gathering, the illustrations were often enough. Ian obtained almost all his information from the illustrations alone. He also used illustrations as stimuli to reminisce about his time in Germany, again turning this strategy into an *avoidance* strategy.

The good overall results by Doris, although of only medium performance, had to do with her learning style. She explicitly learned and progressed in her awareness of German language features, only *asked for the meaning of unknown words* after she tried to guess them, and was always *focused on the task*, and commented favourably on the think-aloud technique as a learning aid.

Summarizing, results show that problem-solving style makes a significant difference in some students' reading success. Doris and Helen were able to overcome some of their linguistic difficulties through positive and constructive learning behaviour, and effective Internet problem-solving strategies. Chris, on the other hand, achieved lower than expected marks due to his hasty completion of the tasks, whereas Ian's problem-solving style showed contradictory characteristics. His linguistic level was low, he had good background knowledge in some areas, he had good computer and strategic skills, but he did not always apply them adequately. He was very motivated and interested in the tasks and questions that seemed relevant to him, and he even did more than the required work. On the other hand, according to his own self-evaluation, he was "lazy" when a text or a task did not appeal to him. He does not fit into the traditional categories of either a "good" or a "weak" student, but has a very idiosyncratic problem-solving style. Since he achieved task results which were above his language level, one can conclude that Internet

tasks provide learner types like him with an opportunity to excel in the foreign language class where they would otherwise have fewer opportunities to excel.

4.3.7 The Internet as medium

Internet reading is mostly hypertext reading, where texts are not read in a linear fashion but are constructed by the reader as he/she navigates between pages and links. Likewise, the students engaging in Internet reading do not receive a text by the teacher which they read from the left-hand upper corner linearly to the end, but they have to construct their own L2 text. The Internet as medium brought about the following observations:

A number of strategies occur only or typically in Internet reading. The reader-based strategy of *scrolling* is one example. It is comparable to *skimming* in print material, where the reader looks over a text in order to find relevant information which will help to understand the gist of a text. Scrolling can also be used for *scanning* where the reader looks for specific information. Most students use *scrolling* since they are used to this strategy from their Internet "surfing" in the L1. Here a transfer from L1 reading strategies takes place. For this reason, we do not encounter the problem of *word-for-word-reading* as much as in traditional reading of printed material. Rather, it is often difficult to get the students to remain on one web page long enough to obtain sufficient information. This is especially true for scanning exercises like Task 1 (Trip to Germany), which often resulted in rather fast and superficial surfing (cf. Franka, Gail, Ian). Furthermore, there was a tendency to scroll or click to a different link when a text became difficult. In this case, scrolling became an *avoidance* strategy (see below).

Other Internet strategies belong to the category of *metacognitive strategies*, since they are used to plan the reading process by constructing the text to be read. *Clicking because of personal interest* refers to the navigation between links on the basis of personal (expressed) interest. All students used this strategy abundantly. One can say that this is THE Internet strategy, since it provides an opportunity for readers to choose their own texts according to their own interest-driven preferences. In Task 1 (Trip), every student used this type of strategy to a large degree. With respect to the other tasks, the use of the strategy depended on each student's field of interest. Usually the more interest there was in the topic, the more clicking was done. This was true of Andy and Chris in Task 4 (Translation), and for Andy, Chris, Gail and Ian in Task 2 (Music). There was generally less clicking in Task 3, since this task required the detailed reading of two single texts, and did not leave much freedom other than the initial decision of a text. With Helen and Ian, two lower-performance readers, it was noticeable that they usually clicked on texts on topics that they already knew something about, expressing this explicitly. There may not have been enough confidence in their language ability to choose a text on some unfamiliar though interesting new topic.

Contrary to expectation, the higher-performance students hardly used the strategy of *Going back and forth on website* at all. This strategy helps to get an overview of a website, and is usually associated with good readers. Ellen, Doris and Helen used it most. It is very much task-related for Task 1, but Doris used it several times for Tasks 2 and 3 as well, and so did Helen with Task 3. In Task 1 (Trip to Germany), Doris used the strategy very appropriately when she tried to get an overview of the tourism webpage first. Remarkable was Ian who commented on the contents of texts in Tasks 2 and 3, but

had not actually read the texts. This seems to be typical Internet reading behaviour where readers go through the web pages very fast, with the main purpose of "checking out" the pages and picking out very specific and personally relevant information.

In a similar vein, the strategy of *comparing the target culture (C2) to one's own (C1)* is an evaluating behaviour and therefore presents a metacognitive strategy. It was explicitly required in Task 3 (*Deutsche Welle*). However, students compared the two cultures in an unsolicited way as well, especially in Task 1 (Trip to Germany) and Task 2 (Music). Although this is probably also done with printed material, one can assume that web pages present a special stimulus for doing so. Web pages are very culture-specific, and even the layout and different ways of presenting material invite cultural comparisons. Some students, especially the higher-performance ones, but also Ellen, furthermore carried out comparisons of the L2 (German) to their L1 (English) in an unsolicited way in Tasks 1-3. This reflects the better students' theoretical interest in the language, and an idiosyncratic interest by Ellen, who explained that because of her mother, who is an interpreter, she has a special relationship with the German language.

As to the *supporting strategies*, one which I had not anticipated but often found in the observations was *exploiting Internet resources.* This strategy refers to actions that students can carry out on the Internet while reading texts, and which help them comprehend the texts or to expand on them. The strategy includes, for example, looking up a map of the region or using an online dictionary. This is done much faster on the Internet than by consulting printed material such as atlases, dictionaries, etc, and the students have acquired competence in this type of quick search for information. Here, the high- and medium-performance students outperform the others considerably. They might

have had more mental (memory) capacity left, and were not totally consumed by the reading task at hand. It seemed to be closely related to motivation, too. Andy and Chris looked for additional maps of the regions they were searching, and Chris filled out a form on the tourism web page, which provided additional language practice. Bernhard, Doris and Franka used *highlighting of text passages*, and Bernhard, Ellen and Franka used an electronic dictionary. Looking for maps was carried out by the lower-performance group students as well, but to a lesser degree. Even the weakest student, Ian, exploited this resource. He also played a game on the tourism site, and googled lyrics and maps in Task 2, outside the actual requirements of the task.

Another supporting strategy, which also occurs in traditional reading but is especially relevant for Internet reading, is *asking for information about German culture.* Internet pages often have cultural material that is very idiosyncratic for the target culture and which requires background information to be understood. But, contrary to expectation, this supporting strategy was not used very often. The relatively low occurrence suggests that lack of cultural background knowledge did not present a major reading problem, at least not consciously in the mind of the reader. Doris asked for cultural information most, and because of her motivated work in other instances it can be interpreted as a special interest in the topics.

Surprisingly, supporting strategies based on technology, such as *using icons* for orienting oneself on the website and finding pertinent information, were largely under-used. Only Bernhard, Doris, and Franka used it more than once in the four sessions, and the weaker students did not use this strategy at all. This is probably due to the culture-specific appearance of the icons which were not known to the students. Thus, a

supporting device which is essential in Internet reading, and forms part of the genre of Internet texts, is often not used by L2 readers.

Similarly, *using pulldown menu* was a very under-used strategy. Only Ellen, Doris, and Helen used it to any extent. They are students who had shown themselves to be computer competent in other situations, too. They used the strategy with Task 1 especially, where it was very appropriate, since the information on the tourism website was structured according to headings in the pulldown menu (for example: states, cities, sights, hotels, activities, etc.). The problem here was that often the students did not understand these headings. They knew where to look for information, but then they did not have the specific vocabulary knowledge to be able to choose one of the options in the menu. I found this lack of navigational vocabulary to be one of the main problems with reading German language websites. It often impedes even more successful searching for information than the lack of general vocabulary for the texts themselves.

The use of the *search button* required the understanding of the word *Suchen* (Search) and certain flexibility in one's search. It was mostly used by the medium-performance group: Ellen, Doris, and Franka. Doris, for example, used the search box to search for an equivalent article on CNN in Task 3 and for a particular region in Task 1: "I looked through the website first, and found it easier to just search for the particular city or region." Using the search button made the search considerably faster. The higher-performance group probably did not need the search function since they found all their information in the headings on the site itself. The lower-performance group (Gail, Helen, Ian) used it less often since it required writing in a search term, which was not always easy to determine in the L2. Also, the result of the search was often a list of URLs (which

might be culture-specific), and weaker students were at a loss to know what to do with them.

Using side columns is an interesting strategy since it is very much culture-related. Some students did not use information on the side columns because they thought it was only advertisements. Apparently that was their expectation from American websites. The students who used the information on side columns most were Franka and Helen, who were generally Internet savvy. It helped them get to the required information sooner than the other students who relied on links at the end of each text, and who therefore needed more time for their searches.

Finally, there is a group of strategies which I call *relief strategies* because they provide relief for students in the face of an overwhelming amount of information and graphic material. In this context, I found that *avoidance* is a central issue in Internet reading. Every student showed avoidance strategies at some point, and that could be seen as characteristic for the role of a student. However, some students used avoidance strategies to a larger degree than others. Bernhard was the only student who did not show any indication of avoidance, and Ellen showed this behaviour to a far lesser degree than the rest of the medium-performance group. Otherwise, avoidance was rather evenly distributed among all students, with Franka, Gail and Ian showing this behaviour most. Since this strategy proved to be pivotal in Internet reading, I describe each student's use of it.

Andy used information that he found by chance while he was looking for something else, and used it to answer some other part of the question in Task 1. This is a very economical strategy (if not opportunistic). Another instance of avoidance was when he

was hesitant to go to the second website in Task 2 (Music), thinking he could find all he needed on the first website, and thus save work.

Chris quickly changed the topic and text whenever it became difficult (Task 1 and 2), and he often remained with his first choice of text although he had the opportunity to choose among different texts, and had the linguistic ability to read more difficult ones. The avoidance here is clearly to be attributed to a desire to finish the task as quickly as possible (see also Section 4.3.6, Problem-solving style).

Ellen only used *avoidance* twice, in Task 1 and 4, both times clicking on the first URL on a list of URLs instead of reading what each was about and then choosing. This could just be an uneconomical way of looking for information, because she was otherwise eager and interested.

Doris, otherwise a motivated reader, accepted the first option when confronted with choices in Task 1. When the texts became difficult to understand, she changed the page. She stayed on pages that looked easy or that she found by chance, e.g. pages on sports. However, she showed genuine satisfaction and even enthusiasm with passages she could understand or which had good pictures, and thus can be defined as a motivated reader, in spite of avoidance strategies.

Franka used *avoidance* many times in Task 1. She also chose the first website from a list of URLs, instead of reading through the whole list and then deciding, and gave up searches quickly. In Task 2 she preferred to listen to music to reading a text, and in Task 4 she quickly gave up on the online translator (Babelfish) and switched to the next one. In her case, avoidance strategies were closely related to her somewhat careless working

style. The Internet as medium seems to provoke and support this type of learning behaviour.

Gail also stayed with the first information she found in Task 1, and used that information although she had been looking for something else. In Task 2 she clicked on the CD instead of on the text, giving up reading several times when the text became too difficult. In Task 3 (*Deutsche Welle*) she chose the first best article and made do with what she understood.

In the same way, Helen accepted the information she found without much effort in Task 1 and did not pursue her search for Vienna, although she was originally interested in information about the Austrian city. In Task 2 she often took the first option, or switched quickly to the next question.

Ian was definitely the king of avoidance. As observed earlier, he tried not to read at all, and only scanned the texts for information that "jumped out" at him. He was very animated and engaged, but more with his own comments and personal experiences than with the actual reading. Thus, he often used information found by chance in order to answer the questions; he concentrated on pictures and on English words and phrases; and he commented from his memory rather than from what he found in the texts. In all this he was agile and alive; he must have perfected this strategy. He also gave up one text when it seemed very long, or when it took a relatively long time to load, and googled for information instead of searching for it on the German website. The most striking example of an *avoidance* strategy was with Task 4 where he chose for his translation the third paragraph of a text because it was the shortest, and he did not see the necessity to read the first two paragraphs in order to know what the whole text was about. In spite of this

constant avoidance of "serious academic work," he obtained relatively good results in the areas where he had high interest and good background knowledge. The Internet thus provides opportunities to circumvent the teachers' goals, to pursue one's own goals, and to still complete typical Internet tasks such as Task 1 and Task 2 satisfactorily.

Avoidance strategies can thus be seen as an economical way of completing tasks when students feel they already have the necessary information and do not need to search further. Or they can be an intent to avoid more strenuous work in situations where further search would have been beneficial.

Closely related to avoidance is the strategy of *clicking rapidly.* It refers to students quickly changing to another text or topic by clicking on a link. Because of the possibility of clicking away from a difficult text, difficult texts are not usually read very carefully. It seems to be a typical Internet behaviour, or habit. The strategy is evenly distributed among all students, again with the exception of Bernhard, where I could not observe the use of this strategy. Even Andy, Ellen, and Franka used it extensively in Task 1, but here it can be justified by the purpose of the reading task – to quickly find different pieces of information.

Reading very fast, without attention to detail. This relief strategy refers to the reading of text passages so fast that much of the contents gets lost or is not understood adequately. Everybody except for Bernhard engaged in this behaviour at some point. As we saw earlier, even Chris, a higher-performance student and a good and confident reader, did it. Maybe he felt over-confident, and did not see the necessity of reading more carefully. Ellen did it less and Doris only in Task 1, but Franka, Gail, and Helen often used *very fast and superficial reading*. Ian used it to an extreme extent in Tasks 1 and 2,

often accompanied by extensive clicking and jumping between pages. This superficial reading is seen especially with scanning and skimming tasks like Task 1 (Trip to Germany) and Task 2 (Music).

In conclusion, my findings show that there is a very specific Internet behaviour which is different from reading printed material. On the positive side, there is the possibility of choice through clicking to different links, thus offering a more autonomous reading style. There is also a tendency to rely on skimming and scanning, to get the gist of texts rather than unproductive word-for-word reading. The negative side of this behaviour is that reading is often done superficially and by quickly clicking to new pages, either in order to find more information, or to avoid a difficult text. This seems to be a behaviour carried over from L1 Internet reading, where one usually reads texts to get an overview and to inform oneself quickly. One is less apt to read a text in detail.

4.3.8 Type of task

Finally, the type of task to be completed also proved to be a determining factor in task outcome and use of strategies. The tasks can be looked at from three perspectives: their topic, their reading mode, and their difficulty.

Task 1: Trip to Germany

This task required authentic Internet search behaviour, i.e., planning a trip with online information. Since foreign language students are usually interested in going to countries where the target language is spoken, this task was very motivating for all students. The reading mode that was required, i.e., scanning for information, was

adequate for the topic, and corresponded to what one would do with tourism websites in one's own language. Since the task was formulated in an open way, most students used it to answer their own real questions about Germany. For example, Doris went beyond what was required in the questions and asked for additional information on "Blade Night" ("Can I ask you a quick question?"). Later, in the same task, she asked for information about private versus public universities in Germany, again a personal concern. The same happened with Andy, Ellen and Ian. They all had either direct experience with trips to Germany before, or would take such a trip in the near future.

Task 1 represented an easy task, according to Skehan's (1998b) criteria. The website has everyday vocabulary, a familiar topic, and the genre is familiar to today's students. The texts are of short length, and the information type of the website is concrete. The task questions themselves were not very demanding since they only required looking for keywords, and the responses only needed to be in the form of short notes. Consequently, most students obtained good results for this task. Only Gail had relatively low results, due mostly to a lack of vocabulary and background knowledge. She furthermore got lost on the tourism website because she did not understand the navigational vocabulary.

The strategy mostly connected with this task was *scanning*. It is a strategy that also occurs in reading traditional printed texts, but seems to have special relevance in Internet reading. In information search tasks like Task 1, scanning was explicitly required. When weaker students used it, they mostly looked for known and recognizable words in a text as a first step towards understanding anything at all, and to be able to answer the task questions. When used by the stronger students, it was used to look for information they

were personally looking for. Thus, all groups were able to use this strategy successfully, but higher-performance students used it more independently.

Task 2: Music

The topic of this task also met with high interest. Almost every university student is interested in music, and when they can combine it with new knowledge about the target culture, the motivation for the task increases. The reading purpose was to get summary information about one singer or band by *skimming* their biography. This was a more demanding task than Task 1, and required closer reading of a text rather than just *scanning* a webpage for bits of information. Hence, the task was of medium difficulty. The topic and the text type were familiar, so the cognitive complexity was not high. However, due to the specific language (young people's language, slang), the code complexity of the task was higher than I had anticipated. Some students, especially Gail, had difficulty understanding the idiomatic language. She did not have enough vocabulary and knowledge of typical expressions to complete the task in a satisfying way. Furthermore, the texts often used irony when speaking about the musicians, or they alluded to facts that only a native speaker could know. Nevertheless, since the task only required skimming, most students were able to concentrate on those parts of the text that they understood, and to answer the questions satisfactorily.

Task 3: *Deutsche Welle*

This was by far the most challenging task. It is with this task that the analyses identified substantial differences in individual learner responses.

First, the topic was more abstract and less personal than the first two topics. Political articles require a good knowledge of the topic, and some students simply were not interested in political topics. Thus, the motivation for this task was not equally distributed. Andy, Chris, and Bernhard were explicitly interested in politics, but some of the medium- and lower-performance students said that the topic did not interest them.

Second, the genre presented problems. Newspaper articles are very culture-specific in their presentation of the information. German newspaper style is characterized by a nominal style (the main information is given in the nouns rather than in the verbs, as in English), and an abstract and specialized vocabulary.

Third, grammatical structures in news articles are much more complex, sentences are longer, and words are longer than in everyday language. They often constitute specialized terms. Thus the *code complexity* was extremely high. All these features make reading political articles in an L2 generally very challenging, and most students struggled through the texts. Furthermore, the type of response, a comparison of two articles and an evaluation, was cognitively more difficult than just collecting data or summarizing a text. Only half the group achieved good results; the other half achieved low results. In this way, this task separated students into high and low achieving students. It is noteworthy that students with good course performance (Andy, Bernhard) achieved their highest marks here, students with low performance (Gail, Helen) achieved their lowest marks, and the medium-performance group (Franka, Ellen) also achieved lower than average scores.

The strategy used most was *skimming*, since students had to read an article and write a summary. Skimming is a very appropriate and task-dependent strategy, at least to get a

first impression of the text. Because of the linguistic complexity of the text, only the high performance students were able to use other strategies successfully, e.g., text-based strategies (*use of word formation, grammar*) and reader-based strategies (e.g., *connecting text to background knowledge, guessing unknown words, making references*). As expected, *relating to personal experience* was not easy with Task 3 (political article), and used much less, which made this task more theoretical and added to the difficulty of it. The case of Helen was interesting, since she continued to use her well developed reading strategies like looking up only keywords, *guessing unknown words* and *evaluating their relevance*, using *cognates* and *grammar* and even *text structure* to understand the text, as well as relating the text to what she had learned in class before, but with this text even her very strategic competence broke down and was not successful. This task was simply too difficult for the lower-performance readers.

Task 4: Automatic translation

This task was introduced for specific instructional purposes, namely to use the Internet for an exercise in language awareness. It was not a true reading task. One could call it a preparatory task for reading, since the awareness of differences in sentence structures between the L1 and the L2 leads to better reading comprehension. To my surprise, the students liked this task very much. Though this was not an authentic task in constructivist pedagogy terms, it met with an appreciation of its learning value by the students. Doris mentioned that she learned most with this task, and took a very creative approach to experimenting with the translation system, thus showing her productive

problem-solving style. Ellen realized why it is not productive to translate word-for-word (as some online translators appear to do) when trying to express oneself in German:

> Yeah, I tend to do word-for-word … but this kind of showed me … it showed me that what I was doing wasn't right, you know? And just helps you reassess it. … like English grammar can apply to German, and German grammar doesn't really apply to English …

The difficulty of the task could not be established easily, since students were allowed to freely choose a text to translate. Students naturally selected a text based on its topic, not for its linguistic difficulty, and the results were very heterogeneous. Bernhard, Chris, Doris, and Franka chose texts that were relatively simple linguistically, whereas Gail and Ian were confronted with quite complex linguistic and stylistic structures in sports articles. Andy's text had "legalese" language, and Helen and Ellen chose extremely condensed political articles. Therefore, the individual reading and translation results of students were not comparable. Even with the linguistically simple texts, there was the problem that they were short extracts from longer texts, and consequently did not offer a full context. This made comprehension more difficult und should be taken into consideration when formulating such a linguistic task.

However, question 3 of Task 4 was independent of the chosen texts, since it required students to predict which type of difficulty might occur in an online translation from German to English. This question asked for the linguistic awareness which students already had, and it brought about very significant differences. Andy mentioned spelling and umlauts, but also subject-verb agreement. Bernhard was aware of the difficulty which idiomatic expressions might bring about, and had an understanding of the importance of

context. Chris mentioned the difficulty of a reduced dictionary and translating slang expressions. Doris was aware of different word order, second meaning of words or modified spelling in both languages. Franka did not predict any problems since she thought her text was simple. Gail only answered the question after having done the online translation; that is, she was not aware beforehand of structural differences between the two languages. Helen mentioned sentence structure in a general way, and Ian also answered the question in a very general way, only alluding to the "weird translations for certain words." This question therefore closely reflected the course performance and language awareness of the nine students, and helped explain the reading difficulties which students had in the other tasks.

Concluding, the type of task determined the degree of reading success and the use of strategies to a great extent. The scanning and skimming tasks (Tasks 1 and 2) provided an opportunity for all students to use their L1 Internet search strategies in an L2 environment. Coincidentally, the topics of these tasks were of more general interest to students. Thus, all achieved relatively good results for these tasks. Task 3 had a three-fold difficulty: The topic was less motivating for half the students, the texts were linguistically too difficult for most students, and the task requirement of comparing two articles, which required detailed reading, was cognitively the most demanding. Therefore, strategies which worked for the other tasks could not be applied. The reading process broke down for about half the class. Task 4 was not a reading task, but evoked active and interested involvement as an awareness exercise.

In the next chapter, I discuss how my findings answer my research questions.

Chapter 5: Discussion

In this chapter, I relate my study results to the original research questions. I first address the four research questions (5.1 to 5.4), and then discuss pedagogical implications (5.5), limitations (5.6), and end with conclusions (5.7).

5.1 Research question 1 - Strategies

Which (successful and unsuccessful) strategies do students use as they complete different types of tasks that involve reading on the Internet? Are there strategies that are specific to Internet reading?

The think-aloud protocols showed that many strategies which are used in traditional reading and which have been reported in the literature (e.g., N. J. Anderson, 1991; Grabe & Stoller, 2002; Hosenfeld, 1984), are also used in Internet reading.

As for *text-based strategies***,** I found instances of *use of spelling*, *use of cognates*, *use of word formation, use of grammar, translation, and word-for-word* reading. The first four strategies are usually well mastered by the second year of learning German, and often applied automatically. Using *word formation* to deduce the meaning of unknown words is a strategy that is especially relevant for German texts, since German has a high number of compound nouns, adjectives, and verbs. In the study, text-based strategies were not always verbalised by students. One can assume that they occurred more often than the students explicitly mentioned them. The *use of grammar* to comprehend texts was used considerably less, and mostly by higher-performance students. Results of Task

4 (Translation) showed that only the high- and medium-performance students had a high degree of grammatical awareness, and this finding is corroborated by the low use of this strategy in Tasks 1, 2 and 3. The strategy *use of translation for text comprehension* was applied by some students, but had different functions for different readers: Lower level performance students used it when the text became too difficult and they had to slow down the reading process. For higher-performance students it meant taking more details into account in their reading and they translated at a natural reading speed. This is in accordance with findings by Kern (1994), who found that mental translation can be used effectively by both strong and weak readers. For strong students it is a means to free memory capacity, and make it possible to continue to problem-solve and maintain concentration. Weak students use translation to overcome weaknesses of word recognition skills or low memory span.

Interestingly, there was less *word-for-word* reading than I had expected. It was only done in a few cases, mostly by weak readers who tried to make sense of a text. I have observed this strategy much more often in the classroom with printed material, where students believe they have to understand every word of the text in front of them. With Internet reading, at least with a typical search task, *scanning* and *skimming* are the usual reading modes, and students transferred these from their L1 Internet reading. Furthermore, there is always the possibility to *scroll* or *click to different texts*, thereby avoiding "to get stuck," and students made use of these possibilities (see *avoidance* strategies below).

Reader-based strategies were easier to observe because students verbalized their strategies when they, for example, *guessed the meaning of unknown words*, or explicitly

connected the text to their background knowledge. In this way, *guessing unknown words* and *making inferences* were strategies that all students used, albeit with varying success. Only when there was adequate linguistic or background knowledge did these strategies lead to better comprehension, thus confirming the literature regarding a necessary threshold level (Barnett, 1989; Eskey & Grabe, 1988). Some students used *summarizing information* in order to express what they had understood or in order to answer the task questions. *Predicting the contents of a text* and *using text structure* were used much less. As predicted in the literature, these strategies were used mostly by "good readers" (Hosenfeld, 1984). A possible explanation for the low use of these strategies by other students is the lack of systematic strategy training that this group of students had received.

There were some strategies that can be found in reading printed material but which seem to be especially relevant for Internet reading. One example is *scanning*. Students used it on websites for quick searches for information. It can be assumed that this strategy has been carried over from L1 Internet reading where it is part of surfing. Students are used to going through websites quickly to look for the desired information. While *scanning* is a strategy that has to be explicitly taught with printed material (to get students away from *word-for-word* reading), scanning on the Internet seems to be a familiar and often-used way of reading. The same is true for *skimming*. Whereas students often do not dare to read quickly through a text when they hold a paper in their hand, one can often see them moving up and down an Internet text in order to look for clues to understanding.

Another strategy which had special relevance in Internet reading was *use of illustrations*. Since websites provide information as much through pictures as through

texts, the use of graphic information becomes essential in decoding websites. Thus, illustrations were used by the Internet-competent students to a great extent, sometimes almost exclusively, relegating the actual reading to a second plane (Doris, Ian). In these cases, the *use of illustrations* can be interpreted as an *avoidance* strategy, prompted by the computer.

Connecting text to background knowledge was another reader-based strategy which I observed more often than in traditional classroom reading. Students with relevant background knowledge had definite advantages in comprehension, thus confirming predictions in the literature (Bernhardt, 1991; Carrell, 1988; Carrell & Grabe, 2002; Eskey, 2002). The Internet seems to invite the use of background knowledge to an extreme in the form of *relating the text to personal experience*. Certain topics, especially the trip to Germany and music, evoked long narratives from some students. They became very eager and engaged with their personal memories or associations. It is possible that reading on the Internet, with its pictures, current content and "aliveness" lends itself to this reaction. Teachers could interpret this phenomenon as a positive "real-life" or "reader-response" behaviour, or, negatively, as an avoidance behaviour, since it keeps students from concentrating on the text on hand. Like the strategy of *using illustrations*, *relating the text to personal experience* was used by some students to avoid close reading.

I observed few instances of the metacognitive strategies *previewing the text*, *evaluating guessed words*, *monitoring*, or *repair*. This might be because the students had not received instruction in these strategies: i.e., they had not learned to consciously monitor their reading process. With respect to *previewing the text*, another explanation

might be that reading on the Internet does not promote this strategy, since one often does not see the entire text. Internet reading is often characterized by reading "bits and pieces of information" rather than obtaining a complete view of a text. On the other hand, there was frequent use of *evaluating contents*. This could also be interpreted as typical Internet behaviour, where users search for specific information and evaluate each text or page according to its value for their immediate purposes. L2 Internet reading thus can be seen as an independent reading mode which furthers the pedagogical goal of student autonomy. On the other hand, L2 Internet reading is often characterized by quick and superficial reading (surfing), transferred from typical Internet reading behaviour in the L1.

A pedagogically valuable metacognitive strategy which I had not anticipated and which seems to be typical of Internet reading is *comparing the target culture (C2) to one's own (C1)*. Since the Internet is very culture-specific, and the students' motivation to read German websites was largely guided by an interest in the target culture (as expressed in the questionnaires and interviews), it is natural that students often compared both cultures. The highly motivated students (Ellen, Andy, Bernhard) even compared the L1 and L2 (German and English). This is an opportunity which foreign language instruction should take advantage of when using the Internet.

As for *supporting strategies*, one strategy that was particular interesting was *subvocalizing*. This corresponds to the concept of private speech in Activity Theory where students were observed using it in order to monitor their problem solving (Donato, 1994; 2000). In a similar vein, McCafferty (1994) found that children use forms of "private speech" ("thinking aloud") when faced with difficulties in order to gain control

over task performance. Usually, private speech has gone underground as inner speech by the time of adulthood, but vocalized forms do resurface in times of cognitive stress. Findings in the literature suggest that inner speech plays an essential role in the process of understanding meaning in the L2. Some authors have identified the role of inner speech or subvocalizing for recognizing the difficulty level of reading texts, or for coping with increasing task difficulties (Hardyck & Petronovich, 1970). Guerrero (1994) thinks that inner speech is a rich vehicle for thinking in the other language. Although inner speech is almost soundless from the point of view of the hearer, it may not be so for the person experiencing it. Students in my study tended to overtly vocalize inner speech, especially when they rehearsed the pronunciation of an unknown word. Würffel (2006), in her study on strategies with a computer-based reading program, found that inner speech was used as an aid to memory, to store and retrieve verbal data. My findings support these interpretations. The transcripts show evidence of using *subvocalizing* to solve a difficult reading problem (Ellen, Helen, Ian).[18] As to a related question sometimes voiced in the literature, whether oral reading supports or impedes the decoding of a difficult text (Roebuck, 2000), I found that *subvocalizing* helped the students become aware of a problem, and to solve it by "sounding it out." It would be interesting to observe whether *subvocalizing* is more present in Internet reading than in printed material. My hypothesis is that the computer, often seen as an interactive partner with whom one speaks as to a person, encourages loud thinking by inviting a "dialogue" with a technological partner.

[18] An alternative explanation is that they verbalized their difficulties more because of the think-aloud requirement.

With respect to the second part of my research question, whether *specific Internet strategies* could be observed, the protocols show ample evidence of such strategies. On one hand, there is the reader-based strategy of *scrolling.* The excerpt of a text that is visible on the screen is smaller than a printed page, which makes *scrolling* on the web page necessary. This can either be done in a linear fashion, line by line, similar to reading a printed text, but using the mouse for moving down in the text. *Scrolling* is also the activity of moving quickly down or up in a text, often jumping around in it. This process is mostly guided by subheadings on the webpage. It is done in order to get an overview of the whole text, and to not only read the small part defined by the computer screen. Thus, *scrolling* has become a necessary skill for any Internet reader, and it is usually transferred from L1 to L2 reading. In my study, all students used it. But again it was apparent that one strategy can have different functions: *Scrolling* was adequately used as a task-dependent strategy with scanning tasks (Task 1), but students also used it as an *avoidance* strategy when the text became too difficult and scrolling down allowed them to avoid the difficult parts. This avoidance of detailed reading by moving quickly over the text or jumping on the screen was a consistent theme in the study, and can certainly be seen as a typical occurrence in Internet reading. On the Internet scrolling is commonly accepted, and indeed a necessary behaviour in hypertexts. In language instruction, this can be a challenge for teachers if they want students to read a text in detail.

Most *Internet-specific strategies* can be categorized as *metacognitive strategies*, since they reflect decisions made for organizing the reading process. These are mainly navigational strategies used to construct the (hyper) text that one will read, and constitutes the most typical and central part of Internet reading. Foremost among the

navigational strategies is *clicking because of personal interest*. Most Internet reading tasks include choices – the choice to click on one link and not another in order to determine what one will read in order to complete the task. This possibility of choice is at the heart of Internet reading in the classroom, and is mentioned in all the pertinent literature (Kubota, 1999; Lee, 1997; Rüschoff, 1999; Warschauer, 2002). The results of my study confirm the importance of *choice*. All students used this strategy abundantly to create their own texts, and they all commented very favorably on this possibility in the post-session interviews. In most cases, students chose texts on topics they already knew something about. Herein lies the main opportunity for instructional purposes: Teachers do not always know what their students are interested in: furthermore, interests vary within the class. The opportunity of allowing students to navigate to texts according to personal interest is one way of meeting this challenge. The case is similar for *clicking because of known words* where students choose texts because they recognize a word (or words) in the name of the link. This strategy gives especially weaker students the opportunity to choose texts which are at their vocabulary level, and does not leave this decision solely to the teacher. It is a step in making student-driven learning more autonomous.

There were a few unexpected findings. For example, I had expected higher-performance students to use more Internet metacognitive strategies, since that is predicted in the literature for traditional reading (Grabe & Stoller, 2002). But both *going back and forth on a website* and *orienting oneself on a website* were used less by higher-performance students than medium- and lower-performance students (Ellen, Helen). Here the Internet skills which students bring to the tasks were more influential in their reading behaviour than their language skills. Not only was the reading process determined by

Internet skills, but so was the outcome of the tasks. Both Ellen and Helen obtained better results in their task response sheets than would have been predicted by their course performance (see discussion in Section 5.3). It can be assumed that their good Internet search skills were responsible for this unexpected outcome.

On the other hand, higher-performance students used the strategy of *trying out different links* more often, probably because they had more confidence in leaving a website and clicking to another one without getting lost in the hypertext structure. Surprisingly, the same was true for the lower-performance student Ian, who used his good search skills to his advantage. Other weak students, however, did not take the risk of *trying out new links*, thus pointing to an area where more scaffolding is needed.

Among the *Internet-specific supporting strategies* is the group of strategies which refer to navigational tools, for example *using icons* in order to find information or *using the pulldown menu*. Both strategies are indispensable in Internet searches and often used by speakers when they search for information in their native language. However, both strategies were very much under-used in the study. This can be explained by the unfamiliar appearance of icons, but, more importantly, by students' lack of navigational vocabulary. Some students tried to use the pulldown menu, but then did not know what the headings meant. Lack of navigational vocabulary was one of the most important findings in this study and was corroborated by students' comments in the post-session interviews. A similar problem exists with the strategy *use of the search button*. Since this requires the correct determination of a search word and the correct spelling of it, few lower-performance students used it. Using the search button, however, makes Internet

reading truly interactive, and would have to be systematically practiced in class for the L2.

An instructionally highly valuable Internet-specific supporting strategy is *exploiting Internet resources.* This refers to the possibility of accessing additional information on the Internet, for example by opening other websites, clicking on Internet resources such as maps, online dictionaries, etc. These tools make reading and using background information much easier on the Internet than with printed material where searches for additional material might involve a trip to the library. Exploiting Internet resources in this way was found to be a very helpful strategy which the higher-performance students were able to use to their advantage. Most lower-performance students were too involved in the challenges of reading the texts to be able to organize extra online support. An exception was Ian who, thanks to his computer skills, background knowledge and high motivation in certain topics (Germany, music) was able to compensate for his lack in language skills by extra activity on the web. Herein lies one of the main instructional advantages of Internet reading: fast, visually pleasing, and easy access to information on the target culture, as well as to additional language practice is very attractive for both linguistically stronger and weaker students.

Finally, there is a new group of strategies which I have called *relief strategies*. Relief strategies have the function of supporting readers in their reading endeavour by meeting the challenges of overwhelming information and visual stimuli on websites. They also ensure a completion of the task without having to read and understand texts in detail. These strategies are *clicking rapidly*, *reading very fast (sometimes inattentively)*, and various forms of *avoidance*. *Avoidance* strategies include using the information one finds

by chance, rather than continuing to look for what had originally been searching, changing the text when it became difficult, taking the first best choice of a list of URLs or of texts on a page, and using previous information for answering the tasks rather than making the effort to search for new information. Avoidance strategies can of course be used in dealing with printed material as well, but the Internet with its possibilities of *clicking rapidly* and changing texts and websites, seems to be especially open to these strategies. *Clicking rapidly* saved students from becoming too frustrated when reading a difficult text. It can be used productively in order to find as much information as possible in a short time (as shown by Andy, Ellen and Franka in Task 1), but it can also be interpreted as an avoidance behaviour, as with Gail and Ian, since these students have also been observed to take shortcuts in other contexts. The same is true for *reading very fast (and inattentively)*. A possible explanation for this very common behaviour could reflect the reading habits of young people. As we saw in Section 4.3.6, this avoidance strategy seems to be more related to problem-solving style than to course performance.

Concluding, the strategies commonly found in traditional print reading are also found in Internet reading, but some of these strategies seem to occur more typically with Internet reading. Additionally, there are a range of strategies which are specific to Internet reading, and which are related to L1 Internet reading strategies and general Internet reading behaviour. One of the most important results of the study with respect to reading strategies is that individual learners use strategies in very different ways. This use depends to a great extent on their language skills, but also on personal factors such as the learners' motivation and problem-solving styles. The latter is in accordance with activity theory which claims that social and personality factors play a determining role for

strategy use (Parks, 2000), or that "the participants' motives shape and guide the particular activity, be it in the laboratory, the classroom, or the street." (Donato, 1994, p. 37).

5.2 Research question 2 – Difficulties

- What are the specific difficulties that foreign language students encounter when they use the Internet to engage in and complete reading tasks? Are the difficulties due to undeveloped linguistic, content or formal schemata?

The difficulties which students encountered in Internet reading pertain to all three areas: linguistic schemata, content schemata, and formal schemata, albeit to different degrees. I found that undeveloped linguistic schemata, i.e., undeveloped language knowledge in the L2, and here especially vocabulary knowledge, presented the most serious difficulties, but that lacking content schemata (background knowledge) also played an inhibiting role for comprehension. Formal schemata were relevant with respect to culturally different websites. Furthermore, there were a number of difficulties caused by the specific Internet environment. In the following, I summarize the findings, which can be found in detail in the synoptic tables (Appendix 8).

Linguistic difficulties occurred in the areas of word recognition, pronunciation, spelling, grammar, vocabulary, and the overall meaning of sentences. At the lowest level of language-related difficulty was word recognition. Eskey and Grabe (1988) point out the importance of speed and automaticity in word recognition, and that the ability to recognize words rapidly and accurately is an important predictor of reading ability. This

was confirmed in the think-aloud protocols, where word recognition difficulties kept students from adequately comprehending the texts. Even Chris, judged by his teacher to be a higher-performance student, showed frequent instances of word recognition difficulties. This is surprising given his good command of German. But he often read too fast and thereby failed to recognize words correctly. Among the group judged by their teacher as having been at the low end of the performance spectrum in the class, this difficulty was mostly observed with Gail and Ian, who were often not able to read and recognize words correctly. In their case it was probably due to a lack of vocabulary knowledge. Incorrect word recognition led to misunderstandings; for example, Ian confused the general pronoun *man* with the specific noun *Mann*. The strategy of *guessing unknown words* can only be effective when basic word recognition is efficient: "There are no short-cuts to automaticity" (Alderson, 2000, p. 19). Interestingly, word recognition difficulty was often observed in connection with pronunciation problems. When students tried to pronounce a word and failed to do so correctly, this was usually due to the fact that they did not recognize or "know" the word (Gail). Thus, faulty pronunciation was an indication that a word had not been recognized, not even in its subcomponents. The importance of pronunciation was a surprise for me, since I had not anticipated that the ability to pronounce words would make a difference in text comprehension. The protocols show that pronunciation problems reflect understanding problems. If a reader cannot form an audio representation of a word, he/she cannot comprehend its meaning. Or, expressed the other way round, if a word is unfamiliar and not comprehensible, the student often cannot pronounce it. This might be because of insufficient pronunciation practice, or because basic phonetic rules have not been taught explicitly. Thus, in this

group the ability to pronounce a high proportion of words in a text was an indicator of high comprehension ability. Failure to pronounce correctly increased significantly from the medium-performance (Doris) to the lower-performance group (Gail, Kelly). Ian was an exception with few pronunciation problems, probably due to his extended stay in Germany.

Difficulties also occurred when students misunderstood text due to lacking knowledge of spelling, although this was not a significant source of difficulty. However, it is a difficulty that has special relevance for Internet reading, for example when a reader is looking for specific information and has to write a word in the "search" box. This is probably one reason why weak students could not avail themselves of this important Internet feature. Helen and Ian even had problems with English spelling, "Ooh … I can't spell in the morning," which points to a general literacy weakness.

Lack of grammatical knowledge was a significant source of reading difficulties. As expected, it did not present a serious problem for the higher-performance group, but decidedly did for Ellen (medium) and Helen and Ian (low). In these groups, the problem consisted, for example, in the inability to recognize the subject and object in a sentence.[19] This is important in German texts, since the object can be placed at the beginning of a sentence. English-speaking students tend to interpret the first noun phrase or pronoun in a sentence as the subject, but that can lead to an incorrect interpretation of the sentence in German. Because of the relatively free word order in German, this is a language-specific difficulty which needs special consideration in German reading instruction. Another grammatical problem concerned the location of the verb. This poses a reading problem

[19] I do not refer to explicitly identifying the subject and object in a sentence, but to recognizing the agent in the sentence.

especially for weaker students who have not integrated their grammatical knowledge sufficiently. In complex verb structures such as modal verb + infinitive, perfect tense (auxiliary + participle), or the "separable verbs" (similar to verb + particle in English, as in "He *looked up* the verb in the dictionary" → "Er *sah* das Wort im Wörterbuch *nach*"), the second component of the verb structure is placed at the end of the sentence. If the strategy of locating different components of the verb in a sentence has not been mastered, valuable time is lost by trying to make sense of a sentence before arriving at the crucial part at the end. Helen often neglected the second verbal part of sentences, where the most important information occurred. Particles in general seemed to be difficult to identify by the weaker group, as well as discourse markers and connectors, negation particles, and prepositions. Furthermore, the inability to determine the word class led to incorrect interpretations of meanings. Another problem was grammatical tense. For example, Doris did not recognize the past tense in the political article and misinterpreted the entire text.

The lack of vocabulary knowledge was by far the greatest source of reading difficulties. All students, with the exception of Bernhard, had this problem. Doris, for example, said of Task 3:

> It's not … okay, if I have the vocab I don't think it would be such a problem for me. But you know, that lack of vocab just makes it more difficult … well, of course, but I mean it makes me not want to have to go through it and look up every word.

The weaker students asked for a high number of unknown words (especially Gail). If they had needed to look up the words in a dictionary, reading would have taken extremely long and would have probably been given up by some of the weaker readers. This was felt most in Task 3 (*Deutsche Welle*). Here it can be attributed to the specialized language

of newspaper articles, with its nominal style and long compounds, and the fact that it was a longer article. Word formation analysis would have helped, but was not often used. Other sources of misunderstanding relating to vocabulary problems were negative transfer errors ("false friends"), figurative meaning, polysemy, as well as academic terms. The fact that negative transfer led to many misunderstandings makes the use of cognates for text comprehension a risky strategy. For example, in Task 1 (Trip to Germany), Doris interprets *See* as sea, while in German *der See* is the lake, and *das Meer* is the sea. However, there were more instances of positive transfer, and the strategy is an efficient one, as long as it is used with caution.

Sometimes students understood each element in a sentence, i.e., the words and the grammatical structure, but were still not able to construct *an overall meaning of the sentence*. This happened even to Andy, a very fluent and good reader. In his case it was with Task 4 (Translation) where he needed the exact meaning of the sentence to complete the task. Ellen mentioned the difficulty of constructing an overall meaning explicitly several times, and so did Doris. The student who had most problems with this phenomenon was Gail, who mentioned her inability to see the overall meaning two to four times in each task. Since she had been estimated as a lower-performance student by the teacher, one can assume that this capacity of assigning meaning to sentences is one that develops relatively late in language acquisition. This confirms Grabe and Stoller (2002), who claim that readers need "countless hours of exposure to print … if they are to develop automaticity in using grammatical structures to assist them in reading" (p. 23). All the above findings confirm the literature which states that grammar and vocabulary are crucial factors in reading comprehension (Alderson, 1993; Chun & Plass, 2000;

Devine, 1988; Fukkink, Hulstijn, & Simis, 2005; Schoonen et al., 1998); for the above-mentioned reasons, this is even more crucial for German.

Cultural knowledge. There are two types of difficulty in this category: Lack of background knowledge and unfamiliarity with idiomatic expressions. The higher-performance group stands out because of their good knowledge of most of the topics treated in the texts, and hence these difficulties were minimal. The medium-performance group showed a medium number of difficulties due to a lack of background knowledge, whereas the lower-performance group had the highest number of instances where lack of background knowledge led to failure to understand. Gail and Helen most exhibited this difficulty, especially as far as the political article (Task 3) was concerned, and Gail even had problems understanding the background of the *American* article (about the Iraq war). Ian lacked geographical knowledge of Germany, although he vividly remembered his experience in Germany. This leads to the assumption that language knowledge is closely related to general knowledge. There might be a relation due to cognitive capacity, or the correlation exists because a language is easier learned and understood if one has more general background knowledge on which to build. A third possible explanation is that motivation is responsible for both successful language acquisition and cultural knowledge building. Based on the high importance of motivation for strategy use which my study has shown, I believe the third explanation is the most plausible one. From a research point of view, cultural knowledge was difficult to observe, since the students did not often state their different understanding explicitly. But there were some instances when students expressed their surprise. Chris, for example, first thought a quiz on the *Deutsche Welle* website was an advertisement. Then, when he learned that it was a quiz, he tried to

fit this information into his expectations in comparable American media: “They are not actually going to make a game show out of it, are they?” Most students, however, experienced the differences in cultural concepts as a lack of vocabulary knowledge, and I had to infer that the inability to guess the meaning of an unknown word was in some cases due to a lack of cultural background knowledge.

Another comprehension difficulty arose in idiomatic expressions. I count this phenomenon as “cultural” since idiomatic expressions are culturally determined, and present one of the crucial differences between most “sanitized” (simplified) textbook texts and authentic Internet texts. Especially the music website presented many unexpected difficulties in this respect. The language used on this website was that of young people, and quite different from standard German. There are many colloquial expressions, indirect speech acts (since L1 websites assume that most young people know what is being talked about), and an abbreviated style of speaking, often similar to writing on a chat site. This style is very difficult for L2 learners, since it is usually not part of language instruction in the classroom. A related feature is the use of irony in web texts. Political commentaries are often ironic, and some of the articles on the news website were written in this style. It was not a general difficulty, however, and I only observed it in the medium-performance group with one instance each. Difficulties with idiomatic language point to the importance of cultural knowledge for reading comprehension in general, but especially for Internet reading, since texts on the Internet show an exceptionally high amount of culture-specific language. This is probably due to the currentness and the appellative nature of Internet texts, a discourse analysis of which,

although beyond the scope of this exploratory study, would be an interesting topic for further research.

Finally, there were the difficulties due to insufficient **formal schemata.** At first sight, the websites as a genre did not present difficulties to students. Today's students are familiar with Internet texts in their own language. They have searched for trips and information about musicians on English websites before. The only difficulty occurred with the political texts in Task 3, where both Franka and Helen commented on the formal and complex style. In German, political texts have a complex nominal style, with many extremely long and subordinated sentences. Surprisingly, after analyzing the protocols, it turned out that students had problems related to formal schemata with the tourism website as well, since it had a culture-specific composition and layout, being the official website of the German tourism bureau. Firstly, students expected to be able to book trips on this site (Franka), but it was purely informational, with links to commercial sites. Secondly, the contents were unusual for the students. Doris, for example, had expected the typical features that Americans look for in Germany (Alps, beer gardens, famous cities), and was presented with features geared to a German audience: Spas, bike riding, theatre and concert events. It seems that German tourists or tourism boards have different concepts of travel and tourism. In general, students often ignored the side columns of websites because they expected only advertisements in this space. On the German websites, however, important information was located on the side columns, and a failure to look for information there often led to unsuccessful searches (Andy: "You wanted to find something, and it looked like a little advertisement on the side"). Surprisingly, Ian did not show any problems with the different layout of German websites, again probably

due to his stay in Germany and frequent use of the Internet for music searches. Ellen commented on the more overt form of presenting sexual content on the music website. This is true of many German (and European) websites and films, and is a typical cultural phenomenon which shocks some students. Thus, while new cultural content is a main motivation to introduce Internet pages into reading instruction, this same factor has its dangers which have to be confronted pedagogically. In my study, students were thrown into this situation. Even Andy, a good reader, showed impatience with the fact that when he clicked on a link, he got to a list of URLs which he had to read through before being able to get to a content site again. Another feature that discouraged most students was the fact that the pictures and map on the tourism site were not clickable, thus forcing them to find other ways of accessing the information they sought. Furthermore, most students were disturbed by the numerous pop-up ads which kept them from reading the text on the screen (Chris on the music website: "These pop-ups are really annoying … nope. Let's try a different band"), and which had to be closed constantly. This was often not easy and again involved understanding German vocabulary. Also, search options were case sensitive, due to the importance of capitalization of nouns in the German language. Searches for musicians in Task 2 had to be entered by last name, which was unusual for students. In one instance (Gail), the correct grammatical article (*der, das, die*) was crucial for searching for a music group (Die toten Hosen), which make searches more difficult if one does not remember the correct article.

Apart from these language-related difficulties, there was the general hypertext-related problem of **getting lost on the website.** This happened very frequently to Andy who was reading too fast or superficially and lost track of the layers of sites in which he was

moving. He was looking for information on the city of Reutlingen, but as he did not know what German region the city was in, and did not know the name of the respective federal state (which was a selection option on the pulldown menu), it was difficult for him to find the information. Furthermore, the tourism website was not very helpful for this kind of search. It mainly had tourist related events and highlights, less factual information on universities, etc. Andy realized this towards the end of the session: "We should have switched to a different website from the beginning." Some of the other students also got lost occasionally, and all on the tourism website. Besides the culture-specific characteristics mentioned above, this website was not well organized and made it difficult for an L2 learner to find information. This points to a task design problem which will be discussed in Section 5.5.

One of the discoveries of my study was that the lack of **navigational vocabulary**, that is, the words that are needed to navigate through websites successfully, presented a serious reading problem. If one does not know exactly what one is clicking on, then confusion is inevitable; the reader loses control over the reading act within the hypertext. For example, Doris used the pulldown menu when she was looking for Bavaria, but did not understand the category *Bundesland* (federal state) which would have quickly taken her to all German states, including Bavaria. Even Chris, judged by his teacher to be a higher-performance student, had problems with navigational vocabulary. Because of these problems with navigation, Chun and Plass (2000) suggest that e-learning platforms provide links to the original website, and show on the navigational column where the reader is at each moment, but that is not feasible when one works with the "live" Internet.

Internet tasks thus present the students with an especially high cognitive load, since they have to integrate verbal and spatial abilities (Plass, Chun, Mayer, & Leutner, 2003).

As can be expected with Internet tasks, there will always be **technological** problems. One general problem was that one of the laboratories had Macs instead of PCs, and most students were used to the latter. Furthermore, there was no possibility of listening to audio material in the labs, and this was a source of frustration, especially with the music task. This is a minor problem, however, and could easily be resolved by the teacher. A more persistent problem was the long loading time of some websites. Some students got so impatient with this that they gave up accessing certain websites (Ian, on Task 2, Music). A particular German problem was the necessity of typing *umlauts* (ä, ö, ü), which sometimes made the online translation sites very difficult. During the music task, some of the students were inadvertently transferred to the Amazon site; they had clicked on a link they did not fully understand, and became discouraged (Doris, Franka, Helen).

Finally, there was the problem of **memory capacity**. It is a feature which relates to the general cognitive abilities of readers, and is decisive for reading comprehension in general, but which took on special importance in the Internet situation. In order to make sense of a sentence or a text by relating it to previously learned material, the reader must keep the information in memory for a sufficient amount of time. Comprehension problems often stem from the insufficient speed at which readers are able to access and process linguistic information in memory. Information is often lost and has to be reestablished. Thus, success in reading comprehension depends to a great extent on the individual's memory capacity (Chun & Payne, 2004; Eskey, 2002; Grabe & Stoller, 2002). While reading on the Internet, some students did not appear to have enough short-

term memory capacity, indicating insufficient automaticity of decoding mechanisms. Andy and Bernhard did not have difficulties in this respect, but Chris did, although his language ability was high. This lack in short term memory often hindered his understanding of a text adequately. He forgot newly acquired words while doing the tasks, which was one of the reasons for his relatively low marks in Tasks 3 and 4, where better memory and concentration would have been beneficial. In the lower-performance group, the lack of memory capacity had even more severe consequences. Gail, for example, forgot words she had just asked about, and had to ask again in order to understand subsequent sections of the text. This difficulty is heightened in Internet reading, since text excerpts disappear from the screen, and one cannot easily go back to them except by tedious clicking. Internet reading thus requires higher memory capacity than reading printed material, where one can easily reread the text. Furthermore, on a printed sheet one can underline or highlight text and thus remember important information more easily.

In conclusion, reading difficulties on the Internet are more complex than in traditional print reading. I observed the traditional difficulties caused by lack of linguistic, content, and formal schemata, but on the Internet there were additional difficulties the students had to contend with: Culturally different websites, danger of getting lost in the hypertext structure, lack of navigational vocabulary, technical problems, and higher demands on memory capacity because of the hypertext structure. These findings confirm Chun's (2001) finding in her study of web-based reading that an authentic website text was more difficult for students to comprehend than a text on the same topic, written by the researchers. As for the students' own perception of their difficulties as expressed in the

post-session interviews, they were mainly concerned with their lack of German vocabulary and grammar (e.g. Doris). There was generally no awareness of a lack of background knowledge or of difficulties with the genre of Internet texts. Explicit awareness training is needed.

5.3 Research question 3 – Course performance

- Do students characterized by higher course performance and students characterized by lower course performance show differences with respect to reading strategies on the Internet, difficulties encountered, and task outcomes?

As shown in Chapter 4, higher- and lower-performance students differed in their use of reading strategies. In general, higher-performance students used text-based strategies such as *word formation* and *grammar* more effectively, and they were able to use reader-based strategies such as *guessing unknown words* or *making inferences* more often. Reader-based strategies, such as *predicting the contents of a text*, *guessing unknown words, making inferences, and using text structure* were used more by higher-performance students than lower-performance students, thus confirming expectations. For example, L2 readers must have sufficient vocabulary knowledge to be able to make use of context and thus to apply their top-down strategies (Bernhardt, 2002; Clapham, 1996), or as Andy very aptly put it: "You have to know a certain level, to be able to swim, so to say, on the Internet." However, I could not confirm what Alderson (2000) claims, that text-based strategies must be in place in order to use reader-based or metacognitive strategies. It is true that in most cases, linguistically weaker students were so

concentrated on the text-based strategies like word and sentence decoding that they could not use reader-based strategies. This was, for example, the case for Gail who did not have capacities free to *use illustrations* for decoding the text in Task 3. For the same reason, Gail was not able to transfer other L1 reading strategies like *making inferences* or *using background knowledge* to her L2 reading. It was confirmed that a certain language threshold must be reached before L1 reading abilities can be transferred to L2 reading (Carrell, 1991). But, as we saw in the discussion on strategies (Section 5.1), there were also cases that run contrary to expectation: Ian, a lower-performance student, used world and topic knowledge very effectively to compensate for gaps in linguistic knowledge and to answer comprehension questions successfully. In this way, he obtained surprisingly good task results, at least in Tasks 1 and 2 that required only scanning and skimming. Thus, this student used reader-based strategies without mastering a certain linguistic threshold level. He was capable to compensate for his linguistic difficulties with good background knowledge and good general Internet searching skills. This addresses a discussion in the literature on whether low-proficiency or beginning readers use more bottom-up strategies (Barnett, 1989) or whether they try to compensate for their lack of linguistic knowledge by using top-down strategies (Wolff, 1987). My finding is that it depends on the individual problem-solving style more than linguistic ability. Furthermore, the use of reader-based strategies was possible for weaker students only in the scanning and skimming task, not in detailed reading of a complex text.

Problem-solving styles had an influence on higher-performance students as well. The analysis of the think-alouds shows that both Andy and Chris, from the higher-performance student group, had problem-solving styles that sometimes prevented them

from working to their full potential. Andy became impatient in his searches easily and did not search systematically (Task 1); Chris was a very fast and sometimes careless worker.

As for *metacognitive strategies*, the situation is similar to that of reader-based strategies. True to expectations, the better students showed more of what Grabe (1991) defined as the metacognitive skills: recognizing the important information in the text, previewing, formulating questions about information, and monitoring the reading process. In a similar vein, Alderson (2000) predicts that good readers move onto higher-level prediction and monitoring. These strategies seem to be related to higher language skills, but they do not occur automatically. For example, hardly any student used *evaluating guessed words*, except for the very good reader Bernhard, and for the low performance but very strategic reader, Helen. The same was true for *evaluating contents*, which only Bernhard used extensively, or *monitoring* and *rereading*, which was only used by Ellen and Bernhard.

Moreover, students who were assessed by their teacher as "lower performance students" also showed difficulties remembering. This confirms findings from Schmidt (1990), who claims that the difference in memory capacity results in differences in input processing, which in turn leads to lower course performance, including reading comprehension. The stronger students in the study had greater working memory attentional capacity, or their working memory functioned at a greater speed. Schmidt also points out that the state of the interlanguage system may have an influence on noticing, and therefore on understanding, a text. Referring to Pienemann's (1984) concept of *readiness* for the acquisition of grammatical items, Schmidt argues that this is also true for noticing. A learner who knows more will also notice more. Students notice only those

words and structures they are ready for, once they have mastered the basic structures. As the protocols show, linguistically weak students were often not able to find anything to notice, they frequently clicked through pages, and left a page quickly when they did not easily recognize words or structures known to them.

There is another area where a clear distinction between higher-level and lower-level language students could be observed: The weaker students used navigational strategies less. This can be explained by the lack of familiarity with culture-specific icons, but also by the lack of navigational vocabulary necessary to understand the choices presented in the pulldown menus. The lack of navigational vocabulary was one of the most severe Internet-related difficulties found in the study.

The protocols show that linguistic knowledge was not the only determining factor in reading comprehension. Often the task results were not as one would have expected, given the students' course performance. Other factors of the situation, such as motivation, goals, strategic reading, or type of activity were often relevant. Personal problem-solving styles and intrinsic motivation played almost as great a role as language skills for differences in performance. The importance of strategy training has been emphasized in the literature (Carrell et al., 1989; Hosenfeld, 1984; Kern, 1989; Oxford et al., 1990), and my findings confirm this. Helen, a lower-performance reader, was able to compensate for language deficits by unusually strategic reading. However, the effectiveness of strategy use was limited to scanning and skimming tasks and linguistically simple texts. The importance of goals and motivation is predicted by sociocultural theory. Vygotskyan psychology claims that the initial motive for engaging in an activity is what determines its outcome – this provides a useful framework for explaining why it may be so difficult

to teach positive language learning strategies to ineffective language learners. A student's goal in using a given language learning strategy helps determine its effectiveness. Gillette (1994) compared "effective" and "ineffective" learners and found that "according to this [sociological] theory, the initial motive of an activity determines the character of that activity" (p. 212). Different reasons for engaging in language study lead to different strategic approaches to language learning, and also determine the use of strategies for solving reading tasks. In this context it was revealing to learn about students' motivation to learn German from the initial questionnaire and from their comments in the post-session interviews. Intrinsically motivated students like Andy, Ellen and Doris showed more successful strategy use. "[It] is not primarily schooling but life goals that may influence the effort a learner makes in learning an L2 and the success he or she may enjoy as a result" (Gillette, 1994, p. 200). Thus, the findings can be interpreted in the light of Activity Theory which defines activity as doing something that is motivated by either a biological or culturally mediated need (Lantolf, 2000a). These needs become "motives" once they become directed at a specific object. As Donato (2000) says: "participants invest their own goals, actions, cultural background, and beliefs (i.e. their agency) into tasks and, thus, transform them" (p. 44).

To summarize, students in the estimated higher- and lower-performance groups showed differences with respect to reading strategies, in that higher-performance students as a rule used text-based strategies more successfully, and used more reader-based and metacognitive strategies. In general, they were therefore more successful in task outcome. However, there were cases where medium- and lower-performance students were able to compensate for language difficulties by using reader-based strategies, as long as the task

did not require detailed reading. Furthermore, motivation and problem-solving styles relativized the influence of course performance levels on the use of strategies and task outcome.

5.4 Research question 4 - Tasks

- Which Internet tasks are most productive in terms of the instructional purpose, i.e., productively use the Internet for foreign language teaching? For example, which types of reading are best suited for Internet text comprehension and lead to better task solution: scanning, skimming, reading for detail, or linguistic noticing tasks?

Overall learner responses to the tasks were positive, even for the difficult one of reading newspaper articles. Students especially liked that they were learning facts about Germany that they would otherwise not have been able to learn. As Gail reports in the interview: "Um, I liked, like, getting new insight on...things I didn't know, just, you know like I learned about German bands …"

Tasks 1 and 2 met students' expectations and interest best, probably because the genre and task requirements were familiar. For example, Andy said "Ah … planning a trip, that's fun, searching several websites, that could be fun," and Doris explained:

> But the most, uh, I guess interesting topic would really be like planning a trip to Germany. 'Cause that's what I like to do, I mean you get to learn about the culture and different places and … so. That was interesting and I think easier to read, too.

Students usually like challenges, as long as they have the resources to cope with them. It was shown that the difference between cognitively demanding and cognitively less demanding tasks had an influence on reading comprehension, as predicted by Cummins (1991), and the difficulty was closely related to the reading mode required by the tasks. The reading strategy required for Task 1 (Trip to Germany) was scanning, and the reading strategy required for Task 2 (Music) was skimming. Both strategies were familiar to the students, and the cognitive complexity was not too high. Furthermore, topics were well-known. When existing background knowledge comes into play, Internet reading becomes more meaningful, more engaging, and therefore more successful. Scanning and skimming tasks are best suited for use in the foreign language classroom. They reflect authentic Internet activities, are not perceived as difficult, and thus counterbalance the difficulty of Internet texts. As Omaggio-Hadley (2001) points out, the difficulty of a task is not so much defined by the difficulty of the text, but by the difficulty of the task requirements, and designing tasks of medium difficulty is the responsibility of teachers.

The disadvantage with scanning and skimming tasks like Task 1 and 2 is that reading can be very superficial. It is possible to not read the text carefully and still obtain good marks by expressing ideas well, guessing in an uninformed way, etc. Precise questions can counterbalance this danger. Hosenfeld (1984) found that if detailed questions are asked, reading becomes more word-by-word, thus more detailed. But as educator one has to be aware that scanning and skimming tasks measure reading strategies and problem solving ability rather than detailed reading ability. It is possible that scanning and skimming is the most adequate use of the Internet in L2 instruction. As Doris commented in the interview about the difference between Internet reading and print material reading:

> No, there is a total difference. ‘Cause, um, even in English, I mean, really on the Internet, you do, you look to skim on the Internet. You are researching quickly, it's the fast thing to do. You know, if you are really doing serious research, I mean, you go to the library, and you look it up in a book.

The reading required in Task 3 was detailed reading applied to a difficult news text. This task thus had a two-fold difficulty, and was too difficult for most students of medium and low course performance. It was with this task that the analyses identified substantial differences in individual task outcome. In analyzing the protocols from Task 3 as well as the interviews, there was frequent frustration among the students. Most students were overwhelmed by the combination of unknown words, a difficult text, and a culture-specific website layout: Gail: “Uh-huh, yeah, I mean it's good to know what's going on, but maybe, in an Internet activity where you're trying to like, figure it out yourself, it's just kinda difficult.” As a consequence, motivation to read was only upheld by the higher-performance group and by Doris, an exceptionally motivated learner:

> No, because I mean, you’re gonna have to discuss and read about politics eventually in your German language career or whatever. So, I mean, yeah, it might not be my favorite, but you still have to do it, you know.

Since detailed reading was required, most students could not apply their usual Internet reading strategies such as *scanning*, *clicking because of personal interest, exploiting Internet resources*, etc. Reading a newspaper article in detail was therefore not an adequate task for this language level. It would have been more productive to read an article of this kind in the classroom with a glossary at hand, the opportunity to underline

and write comments in the margins and to discuss difficulties in a group or with the teacher.

Task 4 was not a true reading task but a language awareness task. In this function, it worked well. Online translators are a "fun" way of training language awareness. All students enjoyed this task, and commented on its high learning potential in the interviews ("The translation was great" … "the Babelfish, I'll keep on learning from that. So that has the most potential"). When pursuing the goals of language awareness, that is, to help students transfer language "input" into "intake" and thus achieve learning gain (Schmidt, 1990), the evidence in this study shows that the linguistic task was a highly useful Internet activity, although not a traditional L2 "reading" activity.

To summarize, the tasks that met students' learning goals most were Tasks 1, 2, and 4. They were therefore the most successful for instructional purposes (cf. Chapelle, 2000). Tasks 1 and 2 furthermore were integrated with other class activities; for example, search findings can be used for student presentations, thus meeting a further axiom of Internet use (Carrier, 1997; Skehan, 1998b). Students were able to appropriate the goals of the tasks and thus achieve more personal satisfaction and perceived learning gain. From the perspective of activity theory, the learner's engagement with a task is critical for its success (Lantolf, 2000b).

5.5 Pedagogical implications

This study has shown the instructional value of using the Internet in foreign language courses. All students expressed high motivation for Internet tasks in the pre-session questionnaire, and confirmed this in the interviews after having participated in the

reading sessions. They especially mentioned the opportunity to read authentic German texts, as well as learning something new and surprising about Germany (Franka, Gail, Helen, Ian), which has a motivating effect. The experiential learning opportunities and the difference to textbook reading were mentioned by several students. For example, Andy said about Internet reading in general: "It was easy, it was fun, it was on the computer, so that's always a plus. You get away from the ordinary, um, book-teacher format," and, commenting on the task on the music website: "…you know how you open the German textbook and it's like dead … you know, you … a song is live, it's in the people's mind, it's there, it's in *Gedanken*, it's more dimensions."

As to efficient uses of Internet activities in the classroom, the study shed light on (a) difficulty levels, (b) the necessity of scaffolding, (c) strategy training, (d) the necessity of attending to learner styles, (e) adjusting tasks to reading and instructional purpose, (f) task design, and (g) the pedagogical value of think-alouds.

(a) Difficulty levels

Internet texts are more difficult than traditional classroom readings because they are geared to native speakers and readers living in the respective cultural environment. As the protocols show, Internet texts are characterized by culture-specific traits, such as idiomatic expressions, irony, or implicit meanings. Therefore, Internet texts often do not meet the instructional axiom that readings have to be at the students' difficulty level. In my study, lower-performance students were often too challenged with detailed reading of authentic and very idiomatic texts (especially in Tasks 2 and 3), which led to frustration rather than to increased motivation to read. For this reason, it is recommended that

students should have at least one year of foreign language instruction, and that the exercises at the beginning should only be simple search (scanning) exercises, leaving more detailed reading for higher levels. This confirms Kubota's (1999) suggestion to frame the tasks in such a way that only *skimming* and *scanning* is required.

For the same reason, Internet reading tasks should start with topics that students can relate to on the basis of their personal experiences, e.g., topics like travel or music. Only then are they likely to apply reader-based strategies such as connecting text to background knowledge or making inferences, and thus to overcome the specific difficulty of Internet texts. Task 3 required reading a political news text which was, too difficult for the majority of medium- and lower-performance students. In this task, two types of difficulty were combined - the linguistic complexity of the text and the high cognitive requirement of detailed reading. Since the difficulty of texts can never be fully controlled, the difficulty of tasks has to be graduated by the teacher. Tasks should promote the development of autonomy, but offer scaffolding when necessary (Brandl, 2002; Warschauer, 1996). Thus, the teacher may define the general purpose of the project, for example planning a trip, and leave to choice which websites to use for the task. Alternatively, the teacher may restrict the number and type of websites, offering pedagogically meaningful ones, but leaving the students to define their own purpose for reading, and to answer their own questions (Chun & Plass, 2000). Research shows that motivation increases when tasks offer reasonable expectations of success but are also perceived as a stimulating challenge (Dörnyei, 2001). This balance between student autonomy and teacher guidance is crucial when using the Internet in the classroom, so that Internet use does not become "an end in itself, lacking the structure needed to

achieve specific educational goals" (Swaffar, 1998, p. 179). Reading tasks involving complex texts offer too little support for intermediate students when they have to be done on the Internet. Students would need glossaries, the possibility of underlining, of going back in the text, of writing in the margins, etc., which reading on the computer does not provide. It is recommended that at the intermediate level detailed reading of topically and linguistically complex texts be carried out in the traditional classroom, with teacher support and on paper.

(b) Necessity of scaffolding

To use the advantages of Internet reading, and at the same time to meet the specific difficulties, scaffolding is needed. The think-aloud protocols have shown how important it is for the teacher to be available to support the students' reading. As Leu and Leu (2000) say: "Students left entirely on their own to 'surf' the Internet will waste much time and learn little from their experiences" (p. xi). The teacher should be present and available for most of the Internet sessions. Otherwise students give up early and do not reach the depth of understanding that is possible with scaffolding. The importance of the teacher being present and helping students is evidenced in my study by the high number of requests for vocabulary or checks for understanding, especially with idiomatic expressions. The teacher can help students find their way on culturally unfamiliar Internet pages, provide geographical and cultural background knowledge, help with pronunciation, and, most importantly, help with navigational vocabulary as needed. The need for teacher presence during the sessions was confirmed in the post-session interviews. Doris mentioned, with respect to the online translation task: "… it helped that

you were there to correct me because I might have thought that that is just another way to do it. But you said it should be this way, so … yeah, I think I definitely learned from it."

Thus, student and teacher together construct meaning from the text passages. This is especially important at the beginning when introducing Internet sessions into the classroom, where the teacher is there to build confidence and prevent frustration. Later, the goal of student autonomy becomes important and allows the teacher to stay more in the background : "The teacher initially provides extensive support for student learning, and then gradually removes the support as students become more adept at independent learning" (O'Malley & Chamot, 1993, p. 118).

Scaffolding can also be given by supporting material: guiding questions which require scanning and skimming, model answers, additional information, or dictionaries. In the interviews, students voiced their desire for vocabulary lists (Franka). Since this is not possible for each potential Internet text, such lists should concentrate on typical navigational vocabulary, such as *Suchen* ("search"), *weitere Informationen* ("further information"), *zurück* ("back"), etc. Gail suggested vocabulary lists for the homepage of a website which would make choosing subsequent links easier:

> Maybe just, a vocab list of the initial page, so that people know what exactly from there on they're choosing and they understand, so they know what to look for in their next site. That would help.

To make Internet reading instructionally valuable it is important to prepare the reading topics in class. If topics are wholly left to the discretion of the student, this can lead to discouraging experiences, as in Task 3 where students did not have enough vocabulary and background knowledge. Topics like the current news should be prepared beforehand,

in class discussions. This wish was frequently expressed by the students in the post-session interviews. Ausubel (1963) introduced the concept of "advance organizer," arguing that by providing students with pre-reading support teachers could help them assimilate new information better. This is especially important for students at lower and medium levels of course performance, as higher level students can spontaneously organize new material. Previewing a text (i.e. discussing what it is about) and introducing difficult vocabulary proved to be helpful for comprehension (Chen & Graves, 1995). One of the lower performance students, Gail, suggested printing out the homepage and going through it in class before the reading session in the lab. In the same way, the teacher could provide a chart of a homepage and make students familiar with its layout. Different functions of websites should be discussed to enable students to evaluate the appropriateness of a site for their reading purpose. Before engaging in a tourism task, maps of Germany could be looked at in class, to make subsequent orientation on the website easier.

To ensure dialogic construction of knowledge, pair work would be advisable. Students can thus complete each other's work. They discuss what they have read in order to construct shared knowledge. It heightens the potential for exploration of the texts. "Collaborative dialogue is dialogue in which speakers are engaged in problem solving and knowledge building" (Swain, 2000, p. 102). As the think-aloud protocols show, students have very different learning and problem-solving styles. By working in pairs, students profit from other ways of learning, and thus facilitate their own. Students confirmed the value of construction of knowledge with partners. Gail reported:

> Uh-huh, yeah, because, well my brain works one way, and I think...in like, on one line, you know, and my brain, the way it like goes about thinking, it always works the same pattern, but with someone else, you know they develop their thinking pattern differently. So when you combine 'em, just, it helps, trying to get through it, as partners because they may think of one thing I never would think of, and vice versa.

Fry and Grair (2001) make an interesting suggestion in order to counterbalance the linguistic difficulty of some websites. They suggest using the English version (i.e., the students' L1) that some websites offer, as comprehension facilitators (so-called parallel texts). Tasks could then be formulated such that they have to be done on the basis of the L2 texts, with a clear language focus. Another possibility to lower the difficulty for students, especially in reading tasks, is to allow students to formulate their findings in their L1, a strategy opted for in this study.

One of the most important things I learned is that students need at least one classroom orientation session in order to make them more confident and aware of possible Internet search strategies with respect to German web pages.

(c) Strategy training

The study showed that students are at different levels of strategic competence, and that the strategic readers had advantages which compensated for language deficits. Internet reading with its challenges of difficult texts and complex hypertext structure makes the mastery of coping strategies even more desirable, and explicit strategy training is necessary. For traditional reading, Hosenfeld (1984) showed that learners who received strategy training were more successful at text comprehension. Recently, Jiang and Grabe

(2007) show in their study that explicit instruction of reading strategies improves the comprehension of texts and the subsequent ability to tackle new texts on one's own. As has been done in traditional reading, teachers should, for example, systematically practice word recognition through frequent reading aloud or dictations, practice guessing unknown words from the context and practice looking up words in an online dictionary. Graphic organizers, in the form of flow-charts, are a way of teaching students to become aware of text structures, and to better comprehend subsequent texts using this awareness. Grammar-related reading strategies, as we have seen, are crucial for understanding German texts. It is critical to be able to analyze the function of parts of sentences in order to avoid the danger of understanding single words, and missing the overall meaning of the sentence. In the specific context of Internet reading, instruction has to focus on the metacognitive strategies of planning the hypertext reading process. It would be constructive to prepare students for cultural differences in websites (such as on the German tourism website), so that they do not become frustrated when they look for specific information and cannot find it. Here *modeling* would be beneficial, that is, the teacher performing a web search for everybody to see. Predicting contents of texts was an under-used strategy in my study, and would be a good candidate for strategy training. Students should be made aware of the value of formulating expectations about a text for its subsequent comprehension. As for technological tools, the use of Internet graphics for orientation (for example icons) should be explicitly trained in class, as well as the use of the pulldown menus and side columns.

Since each student addresses the problem-solving tasks in a different way, it would be useful to make students aware of their individual strengths and weaknesses, and to take

advantage of that knowledge in their work (cf. Doris who was interested in her own strategies and achieved scores that were higher than those of the other members of the medium-performance group). Interestingly, strategically competent students were not always the linguistically strong ones. Low performance students who have good Internet strategies can compensate for linguistic weaknesses. Thus, the Internet provides an excellent opportunity to give different learner types a chance to excel in their field of competence. Instructionally, one could pair students with language or strategic competence to complement their strengths in partner work.

(d) Necessity of attending to learning and problem-solving styles

As the protocols show, students approach tasks in various ways, depending on their problem-solving style. One crucial finding was that students applied different levels of effort to the tasks, and used different ways of solving the problem. The tendency to digress from the reading to talk about one's own experiences could be made profitable for learning by asking students explicitly about their experiences, and having them elaborate on these topics in the L2.

Students who tend to work hastily and sometimes superficially should be given tasks which require more detailed answers (see below under task design).

Since the use of websites promotes multichannel learning, the teacher can provide help tailored to different learner types. Learners who learn best visually should be given tasks where visual information is essential, in addition to the reading text (as in Task 1, where Ian says that he is a very visual person). Verbalizers can profit from additional explanations, as provided by links to dictionaries, thesauruses and cultural background

information. Learners such as Andy and Doris would profit from such additional opportunities to build their language knowledge. Students who are good listeners will profit from additional listening material, e.g., having texts read out aloud (as in the "slow reading of the news" on the *Deutsche Welle* website). The opportunity to listen to songs would have been beneficial for learners such as Chris, Ian, and Franka who expressed an interest in listening.

(e) Adjusting tasks to instructional purpose

The principal goals of using the Internet in foreign language instruction is to gather authentic language and cultural information and thus to enrich the teacher's input. Reading on the Internet is therefore especially appropriate for intercultural teaching (comparing C1/C2). But the Internet can also further the goal of strategic reading. Since reading for gist seems to be a typical Internet behaviour, teachers can take advantage of this instructionally by using the Internet to teach skimming, reading for gist, and avoiding word-for-word reading. The Internet seems to be less amenable for detailed reading, as in Task 3, which is done more productively on paper. In the foreign language classroom, Internet tasks have to be carefully prepared and geared towards specific teaching goals. They furthermore have to be integrated in the whole teaching sequence. Thus, students' search results must be evaluated in a traditional classroom through reporting on readings, discussion of texts, or writing subsequent essays. Only then will Internet reading become a meaningful experience, as understood by constructivist pedagogy. The challenge for the teacher consists of finding individual and group activities that draw upon the Internet's

resources and the students' interest in searching them, and incorporate them in classroom project work.

(f) Task design

The crucial advantage of Internet reading is the opportunity of text choice by the students. In this way, students are given more "ownership" of what they learn (Sherman, 2008). Andy mentioned in the interview that the "pleasurable side of Internet reading is … because you can choose." For this reason, students should be asked as often as possible to pose their own questions about a text, since this reflects authentic behaviour with Internet searches, and corresponds to the constructivist axiom of authentic tasks. Teacher-generated questions should be open enough to leave the choice of topic and area of interest to the student, to avoid what happened in Task 1 where questions guided the search too strictly. In the case of Andy's search on Reutlingen, this led to some frustration, since his search objective was to find factual information about his future university, living conditions, cost of living, etc., and not so much to obtain tourist information ("… sometimes it was just too tedious, like you see it … like I already know it, but it was for you just a way to see that I understood and … to write it down.") A discussion about reading goals and reading purpose before assigning reading tasks can reduce student frustration and at the same time teach a valuable reading strategy – to define one's reading purpose before reading, and then formulate one's own questions. To educate the Internet-competent reader, it would furthermore be valuable to have students compare the relevance of websites for specific questions, and to justify this.

On the other hand, teachers want to pursue their goal of having students read L2 texts with attention to detail. Therefore, there is also a place for teacher questions that are precise enough to ensure that the texts are read, rather than superficially looked at. In the interviews there was evidence that low-performance students prefer precise questions since they give them orientation in the task. Gail said:

> Looking for specific information about...like, specific information you know that's, that was kinda high on my list, just because...well it prompted me to look for something really specifically...it gave me like, it was, less general – general is bad...to me...okay well this is what I need to accomplish, it's like a to-do list, you know what you need to accomplish.

These *guiding questions* should be detailed enough to avoid collecting information by just using illustrations, or by superficial surfing. The solution here might be to leave questions open enough to allow students' choices, but give very clear instructions on how detailed the answer should be. If the question is too vague, the answer is often simply one word. If the question includes the instruction to "give reasons for your choice" or "cite examples for cultural events from the website, giving details about location, times, and prices," then students are less likely to only collect a few key words. Both the instructional goals of student autonomy and language gain have to be carefully balanced, and Internet task design has to address this balance.

Careful selection of websites is crucial. The website chosen in the study for Task 1 (Trip to Germany) was not very well structured and caused many students to get lost in the hyperstructure. Teachers must look critically at websites before assigning reading tasks.

(g) Think-alouds in the classroom

In the interviews, students reported that the think-alouds helped them become more conscious of their learning process (Doris). This confirms Swain's (2006) research which reported that verbal protocols have the power to influence cognition. The think-aloud technique can help students become more conscious of their own reading strategies and reflect on their own learning. Students become aware of these strategies as they try to verbalize them. Swain and Lapkin (2008) used this technique by asking students to compare an original essay they had written with the revised version of this text. They were instructed to think aloud in order for the researchers to document when differences were noticed. Swain and Lapkin concluded that think-alouds help students notice things they would otherwise not notice. In a similar vein, N. J. Anderson and Vandergrift (1996) found in their study of think-aloud protocols with listening tasks that think-alouds were a good metacognitive activity and helped students become better language learners. It would be profitable to include think-alouds at regular intervals in foreign language instruction. On a more regular basis, one can incorporate a *verbal phase*. It asks students to reflect on the activity and verbalize what they learned from it, and what they found difficult. This brings to light things that would not become conscious if they merely completed the tasks.

To summarize, this study sheds light on several aspects of the implementation of Internet tasks in foreign language reading. Foremost is the necessity to control the difficulty of the tasks in order to counterbalance the intrinsic complexity of Internet texts. For the same reason, scaffolding by the teacher or by supporting material is indispensable so that students are not overwhelmed with online difficulties because of lack of

vocabulary, unfamiliar websites, or complex hypertexts. As in reading instruction in general, explicit training in reading strategies that are geared to the requirement of Internet navigating is recommended. Since the study brought out the importance of different problem-solving styles, these have to be considered in both task design and additional supporting material, in order to help students with different interests and needs. Pedagogical recommendations were given with respect to integrating Internet tasks in overall instructional goals, and some guidelines for Internet task design were offered. Finally, think-alouds are recommended not only as a research tool but also as a pedagogical tool in the classroom with the aim of helping students become aware of their learning and problem-solving styles and attending to them.

5.6 Limitations of the study and suggestions for further research

This research is an exploratory study into specific Internet reading strategies. Reading strategies that are used on the Internet have been identified and factors revealed which influence the use of these strategies. One limitation of this and all research into reading strategies is that strategies are not precisely defined categories, but complex cognitive processes, and that their identification depends on the interpretation of the researcher (Würffel, 2006). This makes comparison with other studies into strategies difficult. The present study tried to counterbalance this difficulty by defining as precisely as possible which problem-solving behaviour each strategy refers to. A limitation of this study is that I was the only coder. A second coder and procedures to determine inter-rater reliability would have enhanced the reliability of the findings. As to the data collection instruments, the think-aloud method has proven appropriate to obtain an emic view of the Internet

reading process, and this could not have been accomplished with quantitative instruments. However, there are limitations to this data collection instrument. Think-alouds can interfere with the students' normal problem-solving approaches. Students might not verbalize all that is going through their head at the time of carrying out a task. This was true for the higher-performance students, who often did not talk about what they were doing because they tried to complete the task quickly and had many strategies automatised. Verbalizing seemed easier for the weaker students, since verbalizing their problems was a way of becoming aware of them, and possibly signaling to the researcher that they needed help. Thus, Franka and Gail talked freely about their reading difficulties, whereas Ellen, a more fluent reader, often mentioned that she forgot to think aloud. In general, I had to prompt all students at some point to continue speaking about what they were doing. One way of ensuring consistent verbalizing in future research is to prompt the participants at regular intervals, for example every 15 or 30 seconds.

The awareness of a subsequent assessment of the reading tasks may have changed processes as well. As Alderson (2000) warns: "When we read 'normally', we are not being assessed. Thus, knowing that we are being assessed when reading creates a different event, and it is difficult to extrapolate from 'performance' in one event to 'performance' in the other" (p. 27). Several students showed anxiousness to comply with the task requirements, and they might have read in a different way had I not been present. The research situation with the researcher as *participant observer* can influence the natural reading process (Coughlan & Duff, 1994). Gail mentioned that she only stayed on a certain website (*Deutsche Welle*) because of the task requirement; on her own she would have switched websites. Thus, a focus on the task requirements changed the

normal reading behaviour of the students. This is to be expected, but has to be taken into account when making general statements about students' Internet reading.

In this study, students were allowed to ask me, the participant observer, for the meaning of unknown words. This was done in order not to lose time looking up words in the dictionary, and also because it reflects the normal lab situation where students may ask their teacher for help. Since it was easy to ask the researcher, this strategy (*asking about unknown words*) cannot tell us how many times students would have consulted the dictionary had the researcher not been there. Rather, it indicates how often students do not understand a word and cannot (or will not) guess it from the context. Future research could omit this help from the researcher and observe the students' behaviour when they have to cope on their own.

The sample was not large enough to generalize to the population of university students learning German. Since this is a qualitative study, statistical generalization was not the aim. Rather, readers of this study can look at the detailed descriptions and judge whether their situation is similar enough for some of the results to be transferable (Chapelle, 2000; K. A. Davis, 1995; Duff, 1995, 2008), or decide whether it would be worth replicating the observational methods employed in the present study. Since the study is of an exploratory nature, it should be followed up with quantitative studies measuring larger populations. In such a future study, factors found in this exploratory study, such as language ability, motivation, strategic reading, or problem-solving style, could be isolated as variables in order to determine their precise relation to the use of reading strategies. These variables would have to be measured with independent measures and tested in relation to reading strategies. Language ability should be

measured based on well-known linguistic criteria, rather than relying on the estimate of the teacher. In this study, I described the students in terms of their "course performance" rather than "proficiency" since I relied on the estimate of the teacher. But I would hypothesize that there is a correlation between proficiency and course performance because underlying both is the ability to understand and use language on particular required tasks. Furthermore, if proficiency is a key variable, then students from different classes at different levels should be chosen since students in one class are usually expected to be at a similar proficiency level, especially in lower level foreign language classes. In addition, if proficiency in each language skill, for example reading ability or grammar knowledge, is measured separately, these skills could be related individually to the use of reading strategies. In addition to language proficiency, it would be beneficial to determine the learning history of each participant in a systematic way.

As for the research design, Task 1 (Trip to Germany) used a tourism website which was not well-structured, and might therefore have prevented the optimal use of reading strategies by the participants. Both for research and for teaching, it is mandatory to conduct a structural and stylistic analysis of the websites and exclude those that are not well organized, or where texts have a high amount of idiomatic expressions, figurative meaning, irony, etc. such as the music website in the present study.

Further research could also investigate the learning gain in specific skills, such as reading comprehension, strategy use, vocabulary and grammar development, or cultural understanding through the use of specific Internet reading tasks.

Since the ability to pronounce unknown words seemed to make a difference in the ability to comprehend a text, future research could furthermore look into the precise role of pronunciation in L2 reading.

Finally, action research projects could be designed that look at the effects of different interventions by the teacher, for example training students in the use of German Internet reading strategies and navigational vocabulary, on their reading comprehension and task completion. Furthermore, action research could look into implementing think-alouds as a teaching tool and measure the increase in students' awareness of their learning and problem-solving styles.

A technical limitation of the participant observations was that it was sometimes hard to follow each click by the participants on the web. Although that was not my primary aim, further studies could computationally measure how often students switched websites and thus draw more precise conclusions about the use of clicking to new links (see, e.g., Chun, 2001).

5.7 Conclusion

This study determined the reading strategies which intermediate level American university students in 4th semester German used as they completed reading tasks on the Internet. The findings of this study demonstrate advantages of using the Internet for foreign language reading, but also the difficulties it entails. Students expressed enhanced motivation through the possibility of choice, through the offer of authentic target cultural information and typical everyday language; they showed enthusiasm about new and unexpected information which can be discovered, as well as multiple perspectives which

textbooks usually do not offer. Internet tasks with a focus on the formal features of the target language can promote language awareness in new and stimulating ways. Some learner types with good Internet problem-solving skills had the chance to excel where they could not have done so in traditional reading exercises. However, sometimes the overwhelming amount of material on the Internet led to distraction and avoidance; target language websites often have culture-specific layouts and an idiomatic style, which can make reading Internet pages difficult for weaker readers.

The study also demonstrated the value of introspective data. The think-aloud technique gave insight into processes that are otherwise not observable. To my knowledge, this study is the first to explore Internet reading strategies in foreign language instruction and their determining factors through the use of introspective data. Through the triangulation of think-alouds with other data collection techniques, i.e., questionnaires, participant observation, and interviews, it was possible to determine what motives students had, which specific strategies they used, how successful their reading comprehension was, and how students themselves saw the process of reading on the Internet. Strategies were found which had been identified previously in studies on traditional print reading, such as the *use of cognates*, the *use of word formation*, the *use of grammar*, *word-for-word reading*, *guessing unknown words*, *making inferences*, and *connecting text to background knowledge*. Other previously known strategies have special relevance in Internet reading, such as *subvocalizing* and *relating text to personal experience*. Furthermore, the think-aloud protocols and observations served to identify new strategies specific to Internet reading. They can be largely categorized as metacognitive strategies, since they are used to plan and control hypertext reading. These

strategies are *scrolling*, *clicking because of personal interest*, *going back and forth on a website*, *trying out different links*, and *using pulldown menus*. Finally, a new category emerged within the Internet strategies: the "relief strategies." Relief strategies support the reader by alleviating the challenges presented by an overwhelming amount of information and visual material on the World Wide Web. Examples of relief strategies are *clicking quickly to new websites* and *reading fast with little attention to detail*. These strategies seem to be transferred from L1 Internet reading (surfing).

Through the analysis of the think-aloud protocols eight factors emerged which influenced the individual use of these strategies: course performance as estimated by the teacher, background knowledge, motivation, strategic competence, computer skills, problem-solving style, the Internet as medium, and the type of task. Relating these factors to differences in strategy use, the following results were obtained:

- There seems to be an association between course performance and the use of Internet reading strategies. One explanation for this might be that both tap into some underlying ability or language-processing factor.
- Individual problem-solving styles play a crucial role in the choice of strategies and in Internet reading comprehension.
- Lack of language skills can be compensated for by reader-based strategies such as using background knowledge, making inferences, and using illustrations (usually transferred from L1 reading). This compensation is limited by a language threshold level and by the type of task and text: Compensation for low linguistic level is only likely with scanning and skimming tasks, and with linguistically simple and topically familiar texts.

- A number of Internet-specific difficulties were found, such as layout of culture-specific websites, idiomatic style, getting lost in the hypertext, lack of navigational vocabulary and individual memory capacity. These difficulties have been found for German as a foreign language, but it can be assumed that they would also occur in other foreign language learning contexts.
- These difficulties can be addressed with pedagogical suggestions such as defining a required minimum foreign language level for using websites for reading instruction or reading practice, providing teacher scaffolding, attending to learner styles, and strategy training for students. Teachers should be aware of Internet-related difficulties for students so that they can anticipate and respond to them instructionally. Furthermore, this study made suggestions for Internet task design, and advocated the use of think-alouds in the classroom for greater self-awareness of individual learning and problem-solving styles.

The theoretical contribution of my study consists of the detailed identification of reading strategies that are used by foreign language students reading websites, and the discovery of specific foreign language Internet reading strategies which had hitherto not been researched. The study also expands the discussion of the relation between factors such as language level, motivation, or background knowledge and the use of reading strategies.

Studies of reading behaviour on the Internet have so far only focused on using web-based learning environments, such as the *netLearn* program by Chun (2001) or *German on the Web: Reading German* used by Würffel (2006). The present study used unedited webpages without additional tools such as integrated glossaries, and provides insights into the difficulties which this type of reading entails. Difficulties of reading foreign

language webpages had been discussed in earlier studies (Kubota, 1999; Lee, 1997), but not investigated empirically. The application of verbal protocols allowed the identification and precise description of web-related difficulties. In this way, the study also shows the methodological value of think-aloud protocols to supplement the use of questionnaires and interviews.

The pedagogical significance of the study lies in its potential to raise awareness of foreign language teachers to the differences among students with respect to the Internet reading process, and to the instructional possibilities and limitations Internet reading offers in L2 teaching. The problems of Internet reading (text difficulty, lack of navigational vocabulary, culture-specific websites) can only be effectively solved by thoughtful pedagogical planning. The Internet does not bring about an enhancement in reading comprehension by simply being introduced into the classroom (Chapelle, 2000; Rüschoff & Wolff, 1999). It is an instrument that must be evaluated in its possibilities, limits and functions, for each specific educational environment. The teacher must define the goals of the reading tasks, and organize the steps to reach those goals in accordance with each specific student population. The Internet offers new ways of dealing with students' choice of reading material, with authentic tasks, and with authentic foreign language and culture, as well as with individual problem-solving and learning styles, but it is a tool which must be integrated thoughtfully into the educational process as a whole.

Given the ever-increasing importance and prevalence of Internet use among students, it is crucial for instructors, especially of foreign languages, to exploit Internet resources to the fullest extent possible. Students will spend increasingly more time on the Internet and less time consulting textbooks for their information and knowledge development.

Foreign language instructors can enrich their students' learning experience by enabling them to access foreign language websites in order to enhance their foreign language skills and cultural awareness. The present study is meant to contribute to this goal.

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Appendices

Appendix 1: Letter of initial contact, consent form and questionnaire

The University of British Columbia

Background Information for Consent Form

Title of study: Using the Internet for carrying out reading tasks: How students perceive foreign language websites

Principal Investigator: Dr. Monique Bournot-Trites, Assistant Professor (Faculty Advisor)
The University of British Columbia
Faculty of Education
Department of Language and Literacy Education
Tel. 1-604-822-4873
Email: monique.bournot-trites@ubc.ca

Co-Investigator(s): Ulrike Tallowitz, Ph.D. Graduate student
The University of British Columbia
Faculty of Education
Department of Language and Literacy Education
Tel. (858)-569 5171 (home)
Email: utallo@interchange.ubc.ca

Purpose:
I, Ulrike Tallowitz, am a Ph.D. student at the University of British Columbia, and I am doing this research as part of my dissertation. The research is funded by a grant through the Social Sciences and Humanities Research Council of Canada. The purpose of my study is to observe intermediate level university students of German as they read foreign language texts on the Internet. The literature describes Internet use as often very challenging for the foreign language student, and it would be interesting for teachers to know exactly what is positive and motivating in Internet use and what might be difficult for a language learner. The results of this study are intended to help teachers to better plan Internet activities in their language classes.

Study Procedures:
I will ask all of the students in this class (205B) to fill out a questionnaire (see page 8) with general information about your experience with the Internet so far, your motivation to study German, and which topics are of special interest to you with respect to the German language and culture. This will take about 15 minutes. Please fill out the questionnaire and the consent form and return both to your professor within one week. Filling out the questionnaire means that you agree to my using the data for my study.

In order to carry out my observations, I then need a few volunteer students to sit down with me in front of a computer and explore some German Internet pages. You will be asked to complete reading tasks such as “Plan a trip to Germany for this summer, including a visit to two different cities, and choose a few activities which you can do there.” You will be searching the web pages for the relevant information, and fill out the task card that I will give to you. As you do so, I will observe how you do it, what is easy or difficult, etc. I will also ask you to “think aloud,” that is, to talk as much as you can about what goes on in your mind as you are solving the tasks. You might comment about the similarity or difference of German web pages to the web pages you are used to, or you might want to comment on the tasks and the German texts – what you like about them

or what difficulties you might have understanding them. I am not interested in HOW WELL you can do the tasks, but in HOW you do it, to learn about your perceptions of the activity. My observations and your comments can be very valuable for teachers when they plan Internet activities for their classrooms. If you want to participate in these "think-alouds," please fill out the bottom part of the consent form as well (page 4), and return it together with the questionnaire to your professor.

Amount of time required: Four sessions of 50 minutes, about once per week in March and April. You can use your normal laboratory time for this activity, so you do not have to come in an extra time. Furthermore, participation in this study, i.e., four sessions of Internet search and one interview, will count as work for extra credit in this course.

If you consent to participate in this part of the study, I will interview you about your experiences with the Internet after the computer sessions. You might have additional comments or questions about the activity, and I will ask you about those aspects that I have doubts about. Duration of the interview: 30 to 45 minutes, in an office at European Studies.

If you would like to be informed about the results of this study, you may request a summary of my thesis from me (utallo@interchange.ubc.ca), and I will send it to you.

Confidentiality:
The identities of all participants will be kept strictly confidential. All documents will be identified only by code number and kept in a locked filing cabinet. Participants, the course, and the university will not be identified by name, and pseudonyms will be used in any reports of the completed study.

Contact for information about the study:
If you have any questions or desire further information with respect to this study, you may contact Dr. Monique Bournot-Trites at 1-604-822 4873 (or monique.bournot-trites@ubc.ca).

Contact for concerns about the rights of research subjects:
If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 1-604-822-8598.

Consent:
Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time without jeopardy to your class standing.

If you agree to participate in this study, please fill out the consent form and the questionnaire and return them to your instructor within one week. Furthermore, if you wish to be considered for the Internet sessions and the interviews, fill out the bottom part of the consent form and indicate your phone number and/or email address for further contact regarding the date and place of the sessions and the interview.

We thank you for your participation in this study.

_____	_____
Monique Bournot-Trites, Ph.D	Ulrike Tallowitz, M.A.

Statement of Informed Consent

Title of study: Using the Internet for carrying out reading tasks: How students perceive foreign language websites

Your signature below indicates that you have received a copy of the consent form including the background information of the study for your own records (page 1-4).

I understand that my participation in this study (questionnaire) is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without penalty.

Name _____

Signature _____Date _____

Your signature in the following part indicates that you consent to participate also in the Internet sessions and interviews.

I understand that my participation in this study (Internet sessions and interview) is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without penalty.

Name _____

Signature _____Date _____

In order to arrange a date and place for these sessions, please indicate below your contact telephone number and/or email address:

Phone number _____

Email address _____

Please keep this copy for your records

Statement of Informed Consent

Title of study: Using the Internet for carrying out reading tasks: How students perceive foreign language websites

Your signature below indicates that you have received a copy of the consent form including the background information of the study for your own records (page 1-4).

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Name _____

Signature _____Date _____

In order to arrange a date and place for these sessions, please indicate below your contact telephone number and/or email address:

Phone number _____

Email address _____

Please return this copy to your professor

Questionnaire

Title of study: Using the Internet for carrying out reading tasks: How students perceive foreign language websites

---

This questionnaire aims at providing some background information about the students in this class and will help me plan the web activities that we are going to do together. The identities of all participants will be kept strictly confidential.

Filling out this questionnaire indicates that you consent to my using the data for my study.

Thank you very much for your help!
Ulrike Tallowitz

Name: _____

Date: _____

Class: _____

What is your major at the university?
_____

Number of semesters at university / college: _____

1. Do you use the Internet often?

- ❑ about once a day
- ❑ two to three times a week
- ❑ about once a week
- ❑ other _____

2. What do you use it for mainly? (Several answers possible)

- ❑ games
- ❑ search for information
- ❑ music
- ❑ email
- ❑ other _____

3. What are the three web pages that you visit most often?

a) _____
b) _____
c) _____

4. Would you say you have good search skills or does the World Wide Web overwhelm you sometimes?

- ❑ good skills
- ❑ the WWW sometimes overwhelms me
- ❑ other comments _____

5. Have you ever read German texts on the Internet? Which types of websites?

_____

_____

6. Why are you learning German?

_____

7. As you learn German, are you more interested in the language itself (vocabulary, grammar, idiomatic expressions, etc.) or in the culture of the German-speaking countries?

_____

_____

8. Do you read German texts (print material or Internet) outside of class? Which types of texts?

_____

_____

9. Which topic that you dealt with in class in this or your last German course was the most interesting to you? (Put a 1 before the box of the topic you found most interesting, an 11 before the box of the one you found the least interesting; add any other topic you would like to learn about).

- ❑ Leisure time
- ❑ Communication
- ❑ Germany in the 21st Century
- ❑ Family
- ❑ Music
- ❑ Work
- ❑ Multicultural Society
- ❑ Young and Old
- ❑ Stereotypes
- ❑ Environment
- ❑ Other topics:

_____

10. What aspects of the German culture did you find the most interesting?

_____

11. What aspect of the German language did you find the most interesting?

_____

12. Would you like to look at some German websites? What do you expect from such activities? What do you think you might learn from them? What might be difficult about reading German Internet texts?

_____

_____

13. Have you ever participated in a "think-aloud" session? The think-aloud technique asks students to "think aloud" while they are doing an activity, in this case reading Internet texts. Does this procedure sound interesting to you? What could one learn doing it? What might be difficult?

_____

_____

Thank you very much for taking the time to fill out this questionnaire! Vielen Dank!

Appendix 2: Behavioural Research Ethics Board Certificate of Approval

The University of British Columbia
Office of Research Services and Administration
Behavioural Research Ethics Board

Certificate of Approval

PRINCIPAL INVESTIGATOR	DEPARTMENT	NUMBER
Bournot-Trites, M.	Language and Literacy Educ	B04-0123

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT

CO-INVESTIGATORS:

Tallowitz, Ulrike, Language and Literacy Educ

SPONSORING AGENCIES

Social Sciences & Humanities Research Council

TITLE :

Using the Internet for Carrying out Reading TAsks: How Students Experience Foreign Language Websites

APPROVAL DATE	TERM (YEARS)	DOCUMENTS INCLUDED IN THIS APPROVAL:
MAR 1 1 2004	1	Feb, 2, 2004, Contact letter / Consent form / Questionnaire

CERTIFICATION:

The protocol describing the above-named project has been reviewed by the Committee and the experimental procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approval of the Behavioural Research Ethics Board by one of the following:
Dr. James Frankish, Chair,
Dr. Cay Holbrook, Associate Chair,
Dr. Susan Rowley, Associate Chair

This Certificate of Approval is valid for the above term provided there is no change in the experimental procedures

Appendix 3: Reading tasks

Task 1: **Topic: Leisure Time - Worksheet "A Trip to Germany"**

Task 2: **Topic: Music - Worksheet "Deutsche Pop- und Rockmusik"**

Task 3: **Topic: Communication - Worksheet "Deutsche Welle"**

Task 4: **Linguistic Activity - Worksheet "Automatic translation"**

Name: _____Date: _____ Time: _____

This is my first / second / third / fourth individual Internet session (please circle)

Topic: Leisure Time - Worksheet "A Trip to Germany"

Imagine that you are planning a trip to Germany and you want to visit various cities. The website http://www.deutschland-tourismus.de/ is a German website with travel information about different regions in Germany. You can also link to other sections, e.g. cultural events, leisure activities, short trips, online shopping, online services, information, topics of current interest, etc.

Please search the website for information and answer the questions below. As you are doing so, comment on anything that comes to your mind. You may speak about what you find interesting and exciting, as well as about things you find either boring or difficult to do. Be as specific as you can. Your comments will help me plan future web projects. Viel Spaß!

1. Look at the homepage and get an overview of the different topics on this page. Write down 5 of them.

2. Choose a region (e.g. Bayern, die Ostsee) or a city (e.g. München, Reutlingen, Wien) in Germany, Austria, or Switzerland that you would like to go to. Where can you find information on that region or city?

3. What kind of information in this city / region are you interested in? Write down 1-3 items before you explore the site.

4. Now try to answer your own questions about the place you chose.

5. What kind of cultural events can you participate in in this city / region?

6. What kind of sports can you engage in in this city / region?

7. Did you like this Internet activity? What did you like about it?

_____

What didn't you like about it?

_____

Were there any specific problems or difficulties?

_____

Name: _____Date: _____ Time: _____

This is my first / second / third / fourth individual Internet session (please circle)

Topic: Music - Worksheet "Deutsche Pop- und Rockmusik"

Do you know any German pop or rock stars? Today we will search the WWW for information about one of these stars. Please open the two websites http://www.laut.de/ and http://www.songtext.net/ and answer the questions below.

As you are searching the web, comment on anything that comes to your mind. You may speak about what you find interesting and exciting, as well as about things you find either boring or difficult to do. Be as specific as you can. Your comments will help me plan future web projects. Viel Spaß!

1. Go to the www.laut.de website and skim the homepage for the different topics you can choose from. Write down three of these topics (links) that you would be interested in searching.

2. Search under "Artists A-Z" for one of the following singers: Yvonne Catterfeld, Anna Rosenstolz, Jeanette, Band ohne Namen, Marlon, Freundeskreis, Sarah Connor, or another artist of your choice. Read quickly through their biography and summarize some basic information about the singer(s): Name, where they are from, what style/type of music they play, the names of their albums and most famous songs, etc

3. Describe in about three sentences what the biography says about this singer's music and lyrics.

4. Choose one of the songs and search for the lyrics on the www.songtext.net website (Deutschklasse/205B). What is the topic of the song? Do you like it? Why / why not?

5. Go back to question 1 and search the www.laut.de website for information on the topics you wrote down.

6. Did you like this Internet activity? What did you like about it?

_____

What didn't you like about it?

_____

Were there any specific problems or difficulties?

_____

Name: _____Date: _____ Time: _____

This is my first / second / third / fourth individual Internet session (please circle)

Topic: Kommunikation - Worksheet "Deutsche Welle"

The website of the German TV station *Deutsche Welle* http://www.dwelle.de has news and current information about Germany. The website also has the radio and TV program of *Deutsche Welle*.

Please search the website and answer the questions below. As you are doing so, comment on anything that comes to your mind. You may speak about what you find interesting and exciting, as well as about things you find either boring or difficult to do. Be as specific as you can. Your comments will help me plan future web projects. Viel Spaß!

1. What is the most important current event today? What are three other important news items?

2. Choose one of the topics you have just mentioned, read the respective article and write a three-to-five-sentence summary of the article.

3. Go to an American newspaper or TV station website (New York Times, NBC, CNN, etc.) and look for the same topic there. Read the article about this news item. Write a three-to-five-sentence summary of the article.

4. Now, have a closer look at both articles (the German and the American one). What are the differences? What specific details does one article give, and the other one does not?

5. Do they show a difference in perspective? Where can you see that? Please give examples. (Use the back of this sheet if you need more space).

6. What did you like about this activity? _____

What didn't you like about it? _____

Were there any specific problems or difficulties?

_____

Name: _____ Date: _____ Time: _____

This is my first / second / third / fourth individual Internet session (please circle)

Linguistic Activity - Worksheet "Automatic translation"

As you carry out the following tasks, comment on anything that comes to your mind. You may speak about what you find interesting and exciting, as well as about things you find either boring or difficult to do. Be as specific as you can. Your comments will help me plan future web projects. Viel Spaß!

1. Choose one of the following German websites, and try to translate a section of it into English (only a rough translation, as far as you get in about 15 minutes). You can use your dictionary or an electronic dictionary (e.g. http://dict.leo.org) if you have vocabulary problems.

http://www.tagesschau.de
http://www.brigitte.de
http://welt.de/chl/17.html
http://www.stern.de/

2. You might know some automatic translation features available on the Web. Look at some of these for about five minutes in order to familiarize yourself with how they work. Write down any observations you make.

http://babelfish.altavista.com/babelfish/tr

http://ets.freetranslation.com/

http://translation2.paralink.com/

3. What possible problems for automatic translation can you predict for the text you have just translated yourself (see task 1)?

4. Do a translation of your text with the automatic translation system. Then compare your own translation of the text with the automatic translation. What are the differences? Give language examples where the translation did not work. Can you explain why?

5. What did you like about this Internet activity?

What didn't you like about it?

Were there any specific problems or difficulties?

Appendix 4: Rubrics for evaluating the reading tasks

Categories/ rating points	1	2	3	4
Comprehension of Internet text and topic	Demonstrates limited understanding of the texts and topics of the Internet page.	Demonstrates some understanding of the texts and topics of the Internet page.	Demonstrates appropriate understanding of the texts and topics of the Internet page.	Demonstrates good understanding of the texts and topics of the Internet page.
Content of the answer with respect to the questions in the worksheet.	Minimal or incomplete answer to the question.	Answer contains some relevant information.	Answer contains mostly relevant information.	Complete and appropriate answer to the question.
Detailed reading and comparison (in worksheet *Deutsche Welle*)	Does not find the main points of difference; does not provide any examples.	Finds some differences but provides no examples.	Finds most differences and provides some examples.	Enumerates multiple differences and offers detailed examples.
Detailed reading and linguistic observations (in worksheet "Automatic translation")	Does not find the main points of difference between the German and the English version.	Finds some differences but provides no examples.	Finds many differences and provides some examples.	Finds many differences and offers detailed examples and linguistic explanations.

These aspects may be recorded for research purposes:

Comprehension of **task**	Demonstrates limited understanding of the task / the instructions	Demonstrates some understanding of the task / the instructions	Demonstrates general understanding of the task / the instructions	Demonstrates detailed understanding of the task / the instructions

Appendix 5: Sample interview questions

Sample Interview Questions

During the last four weeks you did several Internet activities and you read German Internet websites in order to complete specific tasks. Today, I would like to ask you about your experiences with the Internet.

1. What did you like about the Internet activities in general?

2. What didn't you like about the Internet activities?

3. Which of the four activities (planning a trip; reading the German news; reading about a German rock singer; the search for linguistic forms) did you find especially interesting? Why?

4. Which one was especially challenging or difficult? Why?

5. Please rank the tasks in an order of preference (Put a 1 before the box of the task you liked most, a 10 before the box of the one you liked least).

- ❑ Searching the homepage of a website for different topics
- ❑ Read a short article quickly, to get the gist of it and write a short summary
- ❑ Read a long article quickly, to get the gist of it and write a short summary
- ❑ Read an article more closely, for detail
- ❑ Carry out a real-life task, such as planning a trip, searching several websites
- ❑ Compare an article on a German website to a similar one on an American website
- ❑ Choosing between different topics, by skimming through the texts
- ❑ Searching a longer text for specific details
- ❑ Read the lyrics of songs of German singers and summarize them
- ❑ Look for specific information, e.g. about leisure activities in a German city.
- ❑ Other _____

5. With which activity did you have most fun? Why?

6. With which activity did you learn most about the German speaking countries?

7. With which activity did you learn most German (language)?

8. Would you read German Internet pages on your own now, outside of class? Why / why not?

9. If you plan to read other German Internet pages in the future, which type of pages would you be especially interested in?

10. As you did the Internet activities, where would you have needed more help, either from your teacher or from supporting material?

11. *Example of review questions*: I noticed that in the activity about a trip to Germany, task 3 (In which cities can you go on a harbour cruise?), you had difficulty finding a harbour cruise on the web page. Why do you think that was so difficult?

12. Do you believe that you read Internet pages in the same way as you read other German (print) texts? If you find it different, in what way?

13. How do you think the reading of German Internet pages could be made more interesting or easier in class?

14. What do you think are the greatest challenges in understanding German Internet pages?

- not enough vocabulary
- complex grammar of the texts
- insufficient cultural knowledge
- Other?

Appendix 6: Observation grid

Name _____ Date _____ Time _____
Worksheet _____ File on recorder _____ Page _____

Time	**Task**	**Activity of reader**: Clicking, next page, going back, scrolling down, scrolling up etc. <u>link</u>	**Emotion**: interest, wonder, frustration **Strategy:** scanning, skimming, word-for-word, dictionary … **Difficulty:** voc, gram., cultural, technical "unknown word" > researcher's comments
10.00 10.15 etc.	**t1** **t2** **etc.**		

Appendix 7: Example of a think-aloud protocol

In the following, I present the first eight pages of a think-aloud protocol, which comprises about one third of the whole protocol. In the left-hand column is the transcription of the taped reading session. The next column contains my observations as participant observer (transferred from my handwritten notes); the next column contains the strategies, coded after the protocols were transcribed. Then follows the description of the observed reading difficulties, and, finally, the emerging themes and categories.

Transcript **Doris** Think aloud 2 of 4 Date of think aloud: **April 15 1 pm** Worksheet: **Trip to Germany**
Type of task: **Scanning**

Duration of recording: 00:00 – 43:00
I have printouts of the web pages the student looks at (one web site with 8 links chosen, 19 printed pages)
U=Ulrike, D=Doris
Observations:

[ ]	= Pause in student's speaking, usually when she is searching the web page
…	= voice trailing off, not completing the sentence, usually because of ongoing search on web page
SURPRISE	= emotion in voice it looks like … = emphasis
Erlebnis	= German words printed in italics
uh-huh	= confirming, encouraging sound
umm	= tentative, searching, pausing sound
(*xxx*)	= My explanations in order to clarify a point in the think-aloud, background information

	Think-aloud protocol	**My observations onsite** Activity on web, such as clicking to previous/next page giving up a text scrolling down page scrolling up EMOTION ***(background info in parentheses)***	**Type of strategy:** e.g., scanning skimming word-for-word translation guessing, inference background knowledge looking up word making prediction hypothesis	**Type of difficulty:** e.g., vocabulary grammar text type (genre) cultural difference Internet search skills technological, e.g. long loading times	**Emerging categories, themes**
U	It's almost 1 o'clock, April 15, and we're doing the worksheet on Leisure time, A trip to Germany.				
D	Yes. Okay.				
U	Thank you very much for continuing to participate.				
D	Yeah, sure. I guess we are going to the Deutschland-Tourism web page. [ ]	typing; goes to www.deutschland.de scrolls down the different sections looks at pictures, looks at possible activities on the first page	scrolling use of illustration skimming orientation on website		pre-selected website by teacher student gets overview use of pictures skimming

U	Have you done your presentation yet?	*(class presentation for which they were able to use the findings of the Internet reading sessions.)*			
D	No, Tuesday.				
U	Aha, what are you doing it on?				
D	Umm, Bavaria.				
U	Because you can, you know, use it.				
D	Yeah, I know, that's perfect. And I'm going to Germany this summer		relating to personal life		
U	Oh, good. That would be another possibility.				
D	Yes, okay. [ ]	searches page	scrolling		
D	Okay. Here: "Look at the homepage and get an overview of the different topics on this page." Okay. [ ] Oh, I've actually already been on that, how funny.	reads question 1 on worksheet clicking SURPRISE	going back and forth on website; relating to personal experience		
U	You have been on that?				
D	Yeah, uh-huh .				
U	How …?				
D	I was working, you know, searching for information on Bavaria and Germany. So I was working on it last night.		relating to class		
U	Oh, good.				
D	Okay, so, they are talking about how …. What's *Er-leb*…?	*Erlebnis*, does not know how to pronounce it well. [web: *Erlebnisland Deutschland*]	asking about unknown word use of title, heading	vocabulary pronunciation	
U	*Erlebnis*? Eh, like a land of experience.	Erlebnis = experience. Researcher completes the phrase, since she sees it on			Teacher helps with compounds

		the screen;			
D	Okay, … okay. So, they're opening, like a statement in Germany, a land of experience, … and they're showing multiple things you can do Ahm …bike riding, spas, ski, or water tours, spas, the mountains, the Alps, and swimming, umm …	there are four small pictures on homepage of different things to do on a vacation in Germany.	evaluates website skimming scrolling use of illustrations		
U	You get that from the pictures?				
D	Just the pictures. We'll have a look at the sitemap and see what they show	There is a link to the Sitemap at the end of the little general text about Germany, underneath the four pictures clicks sitemap, but goes back immediately because it only shows list of categories	use of illustrations search strategy: use of sitemap; monitors reading; goes back and forth on website; repair		
U	Uh-huh	affirmative, supporting search			teacher scaffolding: encouragement
D	Okay, so … [ ] Okay, so they talk about … umm …how much culture it has…	back on first page; reads first overall text *(about 6 lines)*	going back and forth on website, summarizing		
U	Uh-huh				
D	[ ] Personally, it doesn't seem … It looks like they are going for a different approach because I would not go to Germany to go to spas, bike riding, - I would go to the Alps, and beer gardens, and umm, you know, famous cities, museums, and things like that. But evidently they are just trying a different approach, I guess, Okay, I'm just going to list, like, … Bike riding, spa and Alps Okay	writes down answers to question 1 on worksheet	evaluating website; relating to her own experience; relating to American tourist websites clicking because of personal interest	culturally different website, German websites for German native speakers	surprised at different approach of website from what she expected

	then, they mention the water, eh, you know, riding on the rivers and the canals or the sea, along the coast then, it's the "blue wonder"	Second little text underneath second picture, talking about water activities in N. Germany Seen = lakes, not sea … können Sie Ihr "blaues Wunder" erleben = idiom for you can really be favorably surprised	scanning for information	misunderstanding, cognate, "false friend" idiomatic expression	misunderstanding, false friend misunderstanding, idiom
U	Okay	researcher does not correct			
D	"Water tours on rivers, canals and in the sea."	Student writes down second point of first question on worksheet			
U	Uh-huh				
D	And then the rest is just different activities to do Okay, and then bike riding in Saarland?	Other small pictures with short texts, to introduce activities	skimming, summarizing		
U	Uh-huh				
D	Saarland?		asking about unknown word	pronunciation	
U	Excuse me?				
D	Is that how you pronounce it?	asks for correct pronunciation			not knowing how to pronounce a word slows reading down
U	Yes, Saarland				
D	The third one is bike riding in Saarland Ahm, you know, if you're sporty, and you want to go mountain biking, Or along the coast … or come to the coast Okay, the trip of the week is …eh … What's Phänomenta?	Writes down third point on her list kommen Sie auf Ihre Kosten = idiom meaning that you will get your money's worth,	scrolling asking about unknown word	false friends idiomatic expression homophone	misunderstanding because of similar sound, Kosten = coast
U	Phänomenta? It comes from phenomenon, and they just created a new word				Student asks for meaning of a word

D	okay				
U	And it seems to be a physics workshop. I believe it is the name of the workshop.				
D	Okay, and they have well over a hundred interactive experiments, stations. Cool! Sounds like eh … it means business (?) What's eh Lüden….?	PLEASURE, SURPRISE	evaluating website, contents;		motivation through something new, unexpected St asks for meaning of a word
U	Lüdenscheid is the name of the town.				
D	Okay, so, is it more a museum?				
U	It's like a museum				
D	A science museum.		guessing unknown word		
U	It's some kind of a hands-on museum.				
D	Oh yeah, yes: "New Physics science museum w/ interactive experiments"	Writes down fourth point of the list (question 1)			quick reading to get the required 5 points for question 1
D	Okay, the next one is Hamburg Oh, I should put down the town, so, … Lü – den - scheid okay, and then Hamburg the city of big feelings?	Scrolls down, goes to third small picture and text goes back to last point, adds the name of the city = fifth point of her list *Stadt der großen Gefühle* SURPRISE, DOUBT	translating of title		motivation, excitement when something new is discovered (= advantage of Internet)
U	laughs				
D	okay. and eh, big city, a big city of big feelings and eh, play games, win games?	*Deutschland-Gewinnspiel*	guessing unknown words		
U	Mhm, like where you can win something.				
D	Aha, okay.				

	[ ] Are they saying you can win a trip? Or what are they winning?		making inferences		
U	It doesn't say even really what you can win …but I guess …	Yes it does! Researcher makes mistake, student is right			
D	So maybe they're advertising something. You can come to Hamburg and win? Something, like test your knowledge?	(on the German site it is not an ad but a quiz put out by the Tourism office)		culturally different website	expectation from American websites
U	Mhm				
D	Okay, then you do win a trip for this?				
U	laughs	Researcher acknowledges mistake			
D	Okay. … What's "entdecken"? ["Neuland entdecken"]	Neuland entdecken – discover new horizons	asking about unknown word		
U	To discover				
D	Okay, discover. … Okay, that's interesting.		evaluates contents		
U	What is it?				
D	They want to test your knowledge, and then umm I guess by traveling through the regions and the cities, and I guess test your knowledge of German cities?		making inferences		
U	uh-huh				
D	Umm, it kind of looks fun, but we don't want to do it, because it takes us off the topic. [?]	questioning intonation, insecure	goes back to task: focus on task		Conflict between task and fun, personal interest
U	*Both laugh*.				
D	Okay, and we're gonna look under, see, here, to the winning game. It explains more of what … Oh, It's the same thing. So it's the advertisement to win a game which is a questionnaire of German cities, to test your	Two different links going to the Gewinnspiel, from Hamburg text and from icon on side Writes down answer to	clicking because of personal interest use of side columns making inferences		

	knowledge?	question 1, point 5):			
U	uh-huh				
D	Okay. I got five.	Has completed question 1 which required five different points, topics			Focus on task completion, requirement instead of personal interest
U	Uh-huh				
D	Okay, okay, "Choose a region or a city in Germany / Austria / Switzerland that you would like to go to. Where can you find information on that region?"	Reads question 2 out loud			Completion of task questions in sequence
U	uh-huh				
D	We can go to search and type in eh the city we want to look for, or … what's *Ziel*? [ei]	Goes to the search button: *Suche* but does at first not use it, goes to the pull-down menu at the top of the page. Options are *Reiseziel*, *Historical Highlights in Germany*, … Pronounces "ie" like "ei", a common transfer error	monitors reading, planning Internet literacy use of pulldown menu asking about unknown word	pronunciation	Planning of how to tackle task Familiarity with setup of links on homepages Pronunciation
U	*Ziel* is a goal, or the … what do you call it, where you want to travel, the travel umm , like … where you want to go	Reiseziel = destination, but researcher does not think of the correct word at the moment, paraphrases	guessing unknown word	need for navigational vocabulary Pull-down menu is more difficult to use because of the specific navigational terms	Navigational vocabulary
D	like places, or …okay okay all right Okay, this is nice, I could buy to that, different parts of German culture?	Student understands from context	making inferences		
U	mhm				
D	*Infocenter* [ ]	Another button on the menu icons at the top of the	use of icons, options in the		Anglicism in German makes

	I guess you can go to and find out about historical places in Germany, or be there in Germany, and show …	page clicks on it and sees the options but does not use them	pulldown menu		guessing easier good searching skills
U	and are you looking for Bavaria now?	gets a bit lost with many choices in pull-down menu, gets distracted,		too much material on website	Disorientation in hypertext (= danger of Internet)
D	I was thinking maybe I could look for both real quick, but do a short one of each, since I am kind of interested in both?	(both: Germany and Bavaria, her topic for oral presentation)			
U	Okay				
D	Okay, I think I'm going to do a search, to find more information, more specific information, so I'll type in Bavaria … or I should type it in German eh, Bayern	Goes back to the search button *Suche* and types in *Bayern* pronounced like [bay], it should be [bai]	use of search button	overwhelming list of options; pronunciation	computer skills
U	Bayern. *laughs*	(friendly laugh)			Teacher scaffolding: pronunciation
D	What?				
U	Bayern *Both laugh*	Researcher corrects pronunciation			
		(transcript goes on for another 20 pages)			

Appendix 8: Synoptic tables of students' strategies and difficulties

Table 7: Synoptic tables of Andy's reading strategies

Andy TASK 1: Trip to Germany (Scanning)

STRATEGIES	FREQUENCY
Text-Based:	
Cognates	
Using spelling/punctuation	
Using word formation	XX
Grammar	
Translation	X
Word-for-word reading	
Reader-Based:	
Predicting contents of text	XX
Scanning	XXXX
Skimming	XXX
Guessing unknown words	XXXX
Use of illustrations	XXXXXXXXX
Connecting text to background knowledge	XXXXXXXXXXX
Relating to classroom	
Relating to personal experience	XXXXXXXXXXXXXXX
Making inferences	XX
Summarizing information	X
Metacognitive:	
Previewing text	X
Continuing to read	X
Skipping words/passages	XX
Evaluating guessed words	
Evaluating contents	XXXXXX
Comparing L1 and L2 / C1 and C2	XXX
Monitoring	
Rereading	
Repair	
Focusing on task (to get it done)	X
Supporting:	
Asking about unknown word	XXXXXX
Asking about German culture	XX
Reading aloud	XX
Subvocalizing	XX
Subvocalizing when difficult	X
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling	XXXXXX
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXXXXXXXXXXXX
Clicking because of recognized words	XX

Clicking because of task requirements	XX
Going back and forth on website	
Orienting oneself on website	X
Trying out different links	XXXXXXXX
Evaluating text for usefulness	
Evaluating link / website	X
Supporting:	
Using icons	
Using pulldown menu	X
Using search button	X
Using side columns	XXXX
Exploiting Internet resources	XXXXXXX
Relief:	
Clicking rapidly	XXXXXXXXXXX
Reading very fast, carelessly	X
Avoidance (taking what one finds for tasks)	XXXX
Avoidance (when question is global)	X
DIFFICULTIES	**FREQUENCY**
Culturally different website (list of URLs instead of homepage; links have different structure; maps not clickable; case sensitive)	XXXX
Getting lost on websites	XXX
Grammar	
Lacking cultural knowledge (geographical; political)	XX
Memory	
Overall meaning of sentence	
Spelling (capitalization)	X
Task not clear	
Technology	X
Text type	
Verbalizing	
Vocabulary (categories of links, false friends)	XX
Word recognition	XX
OBSERVATIONS	
Main problem: Categories in pulldown menus.	
Student picks up new words as often as he can, to memorize them.	
Student exploits Internet resources, e.g. by clicking on maps and locating towns of interest.	
Good computer skills. Internet seen as a leisure time activity.	
EMERGING THEMES	
Personal relevance for life (e.g. exchange program)	
Advantages of Internet over print material: look up information	
Speed of surfing	
Vocabulary of menus, links.	
Learning through reading	
Cultural differences in website layout.	
Getting lost in hypertext (here: unclear website)	
Imprecise task instructions lead to avoidance strategies	
Teacher scaffolding: provides geographical knowledge; helps navigate the website.	
Prepare tasks in class, e.g. by looking at maps of Germany, discuss function of websites.	

Andy TASK 2: Music (Skimming)

STRATEGIES	FREQUENCY
Text-Based:	
Cognates	
Using spelling/punctuation	
Using word formation	
Grammar	
Translation	XX
Word-for-word reading	X
Reader-Based:	
Predicting contents of text	
Scanning	
Skimming	XXXXXXXXXX
Guessing unknown words	X
Using text structure (discourse features)	
Using illustrations	
Connecting text to background knowledge	XXXXXXXXXXXXX
Relating to classroom	XX
Relating to personal experience	XXXXXXXX
Making inferences	XXX
Summarizing information	XXXXXX
Metacognitive:	
Previewing text	
Continuing to read	X
Skipping words/passages	XX
Evaluating guessed words	
Evaluating contents	XXX
Comparing L1 and L2 / C1 and C2	X
Monitoring	
Rereading	X
Repair	
Focusing on task (to get it done)	X
Supporting:	
Asking about unknown word	XXXXXXXX
Asking about German culture	
Reading aloud	XXXXXXXX
Subvocalizing	
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling	XXXX
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXXXXXXXXXXX
Clicking because of recognized word	
Clicking because of task requirements	X
Going back and forth on website	
Orienting oneself on website	
Trying out different links	

Evaluating text for usefulness	
Evaluating link / website	XX
Supporting:	
Using icons	
Using pulldown menu	
Using search button	X
Using side columns	X
Exploiting Internet resources (Google for lyrics, map)	
Relief:	
Clicking rapidly	XXXX
Reading very fast, carelessly	XX
Avoidance (not going to another website for search)	X
Avoidance (quickly changing websites)	X
DIFFICULTIES	**FREQUENCY**
Bad dictionary	
Culturally different website	
Getting lost on websites	XX
Grammar (prepositions)	X
Idiom	
Irony	
Lacking political background knowledge	X
Memory	
Overall meaning of sentence	
Pronunciation	X
Punctuation	
Spelling	
Task not clear	
Technology (no audio in lab)	XX
Text type	
Verbalizing	
Vocabulary	
Word recognition	XXX
OBSERVATIONS	
Student knows topic well, had searched for German musicians before, on this website.	
Student solves the task more through background knowledge than through reading.	
Good computer skills, fast skimming, fast clicking	
Student is proud of good comprehension;	
Student asks mainly for keywords; later, when tired, asked about more unknown words.	
Student tries to learn new facts about the language.	
When he does not find new information (about Eminem), he loses interest in reading altogether.	
EMERGING THEMES	
Importance of comprehension	
High course performance, Self-confidence	
Importance of personal relevance of text (otherwise not interested)	
Velocity, Internet habits	
Getting lost in hypertext (here: due to fast clicking)	
The "known" as starting point for clicking	
Teacher scaffolding: provides cultural knowledge	

Andy TASK 3: Deutsche Welle (Detailed)

STRATEGIES	FREQUENCY
Text-Based:	
Cognates	
Using spelling	XX
Using word formation	XXX
Grammar	XXXX
Translation	
Word-for-word reading	
Reader-Based:	
Predicting contents of text	XXXX
Scanning	
Skimming	XXX
Guessing unknown words	XXXXXXXXXXX
Using text structure (discourse features)	
Use of illustrations	X
Connecting text to background knowledge	XXX
Relating to classroom	XX
Relating to personal experience	
Making inferences	XXXXXXXXXX
Summarizing information	XXXX
Metacognitive:	
Previewing text	
Continuing to read	
Skipping words/passages	X
Evaluating guessed words	
Evaluating contents	XXXXXXXXXXX
Comparing L1 and L2 / C1 and C2	XXXXX
Monitoring	
Rereading	
Repair	
Focusing on task (to get it done)	X
Supporting:	
Asking about unknown word	XXXXXXX
Asking about German culture	
Asking for pronunciation	X
Reading aloud	XXXXXX
Subvocalizing	XX
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXX
Clicking because of recognized word	
Clicking because of task requirement	
Going back and forth on website	XX
Orienting oneself on website	

Trying out different links	
Evaluating text for usefulness	
Evaluating link / website	
Supporting:	
Using icons	X
Using pulldown menu	
Using search button	
Using side columns	
Exploiting Internet resources	
Relief:	
Clicking rapidly	X
Reading very fast, carelessly	XXX
Avoidance	
DIFFICULTIES	**FREQUENCY**
Bad dictionary	
Culturally different website	
Getting lost on websites	
Grammar (reflexives, subject/object, possessives)	
Idiom	
Irony	
Lacking cultural knowledge (political)	
Memory	
Overall meaning of sentence	X
Pronunciation	
Punctuation	
Spelling	
Task not clear	
Technology	XX
Verbalizing	XX
Vocabulary (categories of links, false friends)	XXXXXXXX
Word recognition	
OBSERVATIONS	
Interest in topic, good political background knowledge	
Intrinsically motivated; sees task as a learning opportunity	
Asks for words in German to express his ideas; repeats new words to himself to memorize them	
Good German speaking skills; prefers German think-alouds	
Appropriate use of idiomatic expressions	
Proud of his reading comprehension; emotionally engaged	
EMERGING THEMES	
Importance of choice	
Importance of background knowledge	
Velocity	
Personal relevance	
Intrinsic motivation	
Vocabulary	

Andy TASK 4: Translation (Linguistic)

STRATEGIES	FREQUENCY
Text-Based:	
Cognates	
Using spelling/punctuation	
Using word formation	XXXX
Grammar	XXXX
Translation	X
Word-for-word reading	XX
Reader-Based:	
Predicting contents of text	X
Scanning	
Skimming	X
Guessing unknown words	XXXXXX
Using text structure	
Use of illustrations	X
Connecting text to background knowledge	XXXXXXX
Relating to classroom	XXXX
Relating to personal experience	XXXXXXXX
Making inferences	X
Summarizing information	XXX
Metacognitive:	
Previewing text	
Continuing to read	
Skipping words/passages	
Evaluating guessed words	X
Evaluating contents	XXXXXXXX
Comparing L1 and L2 / C1 and C2	X
Monitoring	
Rereading	
Repair	XXXX
Focusing on task	
Supporting:	
Asking about unknown word	XXXXXXX
Asking about German culture	
Reading aloud	XXXXX
Subvocalizing	
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXXXXXXXXX
Clicking because of recognized word	
Clicking because of task requirement	
Going back and forth on website	
Orienting oneself on website	
Trying out different links	XXXX

Evaluating text for usefulness	
Evaluating link / website	XX
Supporting:	
Using icons	
Using pulldown menu	
Using search button	
Using side columns	
Exploiting Internet resources	
Relief:	
Clicking rapidly	XXXXX
Reading very fast, carelessly	
Avoidance	
DIFFICULTIES	**FREQUENCY**
Bad dictionary	
Culturally different websites	XX
Getting lost on websites	
Grammar (subject/object)	X
Idiom	
Irony	
Lacking cultural knowledge (geographical; political)	
Memory	X
Overall meaning of sentence	XXXXXXX
Pronunciation	XXXX
Punctuation	
Spelling (capitalization)	
Task not clear	
Technology	XX
Text type	
Verbalizing	
Vocabulary (false friends, specific, figurative meaning, polysemy)	XXXXXXXXXXXXXX
Word recognition	
OBSERVATIONS	
Effective reading strategies; asks only for key words.	
Reading is guided by personal interest, and not only by a desire to get the task done.	
Has personal experience with the German culture.	
Gets emotionally engages when he learns something new.	
Reads texts carefully, trying to understand all the details	
Digresses from task to talk about own experiences only when the text becomes very difficult.	
Frequent evaluation	
Good computer skills	
EMERGING THEMES	
Cultural differences	
Choice of reading material	
Relation to personal experiences and classroom	
Teacher scaffolding	
Velocity	
Intrinsic motivation	
Personal interest	

Table 8: Synoptic tables of Doris's reading strategies

Doris TASK 1: Trip to Germany (Scanning)

STRATEGIES	FREQUENCY
Text-Based:	
Cognates	
Using spelling/punctuation	
Using word formation	
Grammar	
Translation	XX
Word-for-word reading	
Reader-Based:	
Predicting contents of text	
Scanning	XXX
Skimming	XXXXX
Guessing unknown words	XXXXXXXXXXXXXX
Using text structure	
Using illustrations	XXXXXXXXX
Connecting text to background knowledge	XXXXXX
Relating to classroom	XXXXXXXX
Relating to personal experience	XXXXXXXX
Making inferences	XXXXXXX
Summarizing information	XXXXXXX
Metacognitive:	
Previewing text	
Continuing to read	
Skipping words/passages	XX
Evaluating guessed words	
Evaluating contents	XXX
Comparing L1 and L2 / C1 and C2	XXXXXXX
Monitoring	XXXXXXXXX
Rereading	
Repair	XXX
Focusing on task (to get it done)	XXXXXXXXXX
Supporting:	
Asking about unknown word	XXXXXXXXXXXXXXX
Asking about German culture	XXXX
Reading aloud	
Subvocalizing	
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	XXXXXXXXXXX
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXXXXXXXXXX
Clicking because of recognized word	
Clicking because of task requirements	XXXXX
Going back and forth on website	XXXXXXXXX
Orienting oneself on website	X

Trying out different links	X
Evaluating text for usefulness	XX
Evaluating link / website	XXXXXXX
Supporting:	
Using icons	XX
Using pulldown menu	XXXXXX
Using search button	XX
Using side columns	XX
Exploiting Internet resources (new info)	X
Relief:	
Clicking rapidly	XXXXX
Reading very fast, carelessly	XXXXX
Avoidance: (using first option)	XXXXXXX
DIFFICULTIES	**FREQUENCY**
Culturally different website (tourism, list of URLs)	XXXX
Getting lost on websites	XXXXX
Grammar	
Idiom	XXX
Irony	
Lacking cultural knowledge (geographical; political)	X
Memory (too much material)	XX
Overall meaning of sentence	X
Pronunciation	XXXXXXX
Vocabulary (navigating, specific/regional terms, compounds, false friends)	XXXXXXXXXXXXXXXXXXXX
OBSERVATIONS	
Interest in search task since she is going to Germany and has a class project on Germany	
Gets lost a few times because of fast clicking but manages to write down comprehensive answers.	
Highly motivated, conscientious reader and learner	
Pronunciation problems with unknown words	
Good computer skills.	
Monitors reading, focuses on task	
Sometimes content too fast with what she found, especially as she got tired	
More digressions, Trial and error behaviour	
Often used first option of a number of URLs	
Interested in gist of texts, because this is typical of Internet searches, or of former strategy training	
She liked the thinkalouds because they made her reflect	
EMERGING THEMES	
Expectation from American websites: ads where the German sites do not have them	
Conflict between interest and task requirement	
Superficiality of answers / Velocity	
Task instructions unclear (tasks 2 and 3)	
Teach scaffolding: guide through tasks, correct pronunciation, cultural background knowledge, construction of meaning between teacher and student	
Advantages of Internet: motivating - the unexpected, a new type of task or new cultural information about Germany; choice	
Disadvantages of Internet: distraction, too much material, idiomatic expressions	

Doris TASK 2: Music (Skimming)

STRATEGIES	FREQUENCY
Text-Based:	
Cognates	
Using spelling/punctuation	
Using word formation	
Grammar	
Translation	XX
Word-for-word reading	
Reader-Based:	
Predicting contents of text	
Scanning	XX
Skimming	
Guessing unknown words	XXXXXXXXX
Using text structure	
Using illustrations	
Connecting text to background knowledge	X
Relating to classroom	X
Relating to personal experience	XX
Making inferences	XXXXXXXX
Summarizing information	XXXXXXXXXXX
Metacognitive:	
Previewing text	
Continuing to read	X
Skipping words/passages	
Evaluating guessed words	XX
Evaluating contents	X
Comparing L1 and L2 / C1 and C2	X
Monitoring	
Rereading	
Repair	XX
Focusing on task (to get it done)	XXXXX
Supporting:	
Asking about unknown word	XXXXXXX
Asking for detail of German culture	X
Reading aloud	
Subvocalizing	
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling	X
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXX
Clicking because of recognized word	
Clicking because of task requirements	X
Going back and forth on website	XXX
Orienting oneself on website	XX
Trying out different links	XXXXXXXX

Evaluating text for usefulness	
Evaluating link / website	XXXXXXXXXX
Supporting:	
Using icons	X
Using pulldown menu	X
Using search button	XX
Using side columns	
Exploiting Internet resources	
Relief:	
Clicking rapidly	X
Reading very fast, carelessly	
Avoidance	
DIFFICULTIES	**FREQUENCY**
Bad dictionary	
Culturally different website (last name)	X
Lacking cultural background knowledge	XXXX
Memory	
Overall meaning of sentence (indirect style)	X
Pronunciation	XXX
Punctuation	
Spelling	
Task not clear	XX
Technology (guided to Amazon, cannot listen to music, gets thrown out)	XXXXX
Text type	
Verbalizing	
Vocabulary (self-report)	XX
Word recognition	
OBSERVATIONS	
Student is enthusiastic about the possibility of choosing Yvonne Catterfield, a familiar artist	
She's excited about the "Serfs" on the Songtext website, and that the website is constructed by users	
Gets frustrated when she misunderstood first sentence in biography and teacher corrects her.	
Importance of confidence building	
Student is good at inferencing; general cognitive ability?	
Evaluates task. Very good computer skills	
EMERGING THEMES	
Teacher scaffolding:	
helping with technology, giving cultural background knowledge,	
giving helpful hints to prevent frustration, clarifying the task	
building confidence	
helping with pronunciation	
Choice	
Advantages of Internet:	
emotional engagement with new and unexpected info	
surprise factor	
finding new info in the course of searching something else	
extremely current, e.g. with German music	
Pedagogical suggestion: have students evaluate webpages	

Doris TASK 3: Deutsche Welle (Detailed)	
STRATEGIES	**FREQUENCY**
Text-Based:	
Cognates	XX
Using spelling/punctuation	
Using word formation	XXX
Grammar	
Translation	X
Word-for-word reading	
Reader-Based:	
Predicting contents of text	
Scanning	
Skimming	XXXXXX
Guessing unknown words	XXXXXXXXXX
Using text structure (discourse features)	X
Using illustrations	X
Connecting text to background knowledge (stereotypes)	XXX
Relating to classroom	
Relating to personal experience	XX
Making inferences	XXXXXXXXXXXXXXXXXX
Summarizing information	XXXX
Metacognitive:	
Previewing text	
Continuing to read	
Skipping words/passages	X
Evaluating guessed words	
Evaluating contents (surprise)	XX
Comparing L1 and L2 / C1 and C2	XXXXXXXXX
Monitoring (wants to get overview first)	XX
Rereading	
Repair	X
Focusing on task (confirmation)	XXXXX
Supporting:	
Asking about unknown word	XXXXXXXXXXXX
Asking about German culture	
Reading aloud	
Subvocalizing	XX
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-based:	
Scrolling (=skimming)	XXXXXX
Using website structure	XX
Metacognitive:	
Clicking because of personal interest	
Clicking because of recognized word	
Clicking because of task requirement	X
Going back and forth on website	XXX
Orienting oneself on website	XX
Trying out different links	

Evaluating text for usefulness	
Evaluating link / website	XXX
Supporting:	
Using icons	
Using pulldown menu	
Using search button	XXXX
Exploiting Internet resources (Google for lyrics, map)	
Relief:	
Clicking rapidly	
Reading very fast, carelessly	X
Avoidance (goes on quickly)	X
DIFFICULTIES	**FREQUENCY**
Grammar (past tense)	XX
Idiom	XX
Overall meaning of sentence	XXXX
Pronunciation	XXXXX
Spelling	X
Technology (voice recorder picks up other noises)	X
Verbalizing	XX
Vocabulary (compounds)	XXXXXXXXX
Word recognition	XX
OBSERVATIONS	
Student clarifies task first.	
Student uses background knowledge (stereotypes) to guess that the article is about drugs (Brazil).	
In reality, the article is about the smuggling of tropical plants.	
Student asks for words after she has guessed, to confirm.	
She has problems recognizing cognates like *Autor* (author)	
In general, difficulty inferencing because of lack of historical and political background knowledge	
Overwhelmed by unfamiliar vocabulary and topic.	
However, she understands article well with the help of the teacher.	
She is very focused on task and shows no digressions, keeping text in mind while continuing to read.	
Her results on the worksheet look much better than most students.	
Very conscientious student.	
EMERGING THEMES	
Teacher scaffolding:	
clarify tasks	
give meaning of unknown words	
suggest strategies	
decode unknown words	
provide historical background knowledge	
explain idioms	
Cultural stereotypes	
Interpretation of word "political" as ideological	
Task: not always the same topics on German and North American websites.	
Reformulate task: "similar article"	
Student's view: Lack of vocabulary and grammar, liked to get a different perspective, good to have a task that requires closer reading	
Choice	

Doris TASK 4: Translation (Linguistic)

STRATEGIES	FREQUENCY
Text-Based:	
Cognates	
Using spelling/punctuation	X
Using word formation	
Grammar (subordinate sentences, pronouns)	XX
Translation	XX
Word-for-word reading	X
Reader-Based:	
Predicting contents of text	XXX
Scanning	
Skimming	
Guessing unknown words	XXXXXXXXX
Using text structure	
Using illustrations	X
Connecting text to background knowledge	X
Relating to classroom	
Relating to personal experience	XXXX
Making inferences	XXX
Summarizing information	XXX
Metacognitive:	
Previewing text	
Continuing to read	
Skipping words/passages	
Evaluating guessed words	X
Evaluating contents	X
Comparing L1 and L2 / C1 and C2	X
Monitoring	
Rereading	
Repair	XXX
Focusing on task	XXXXXXX
Supporting:	
Asking about unknown word	XXXXXX
Asking for detail of German culture	XX
Reading aloud	X
Subvocalizing	XX
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXXXX
Clicking because of recognized word	X
Clicking because of task requirement	
Going back and forth on website	X
Orienting oneself on website	
Trying out different links	XXXXX

Evaluating text for usefulness	
Evaluating link / website (translator, grammar, style, semantics)	XXXXXXXXXXXXXXXXXXXXXXXXXXXX
Supporting:	
Using icons	
Using pulldown menu	
Using search button	
Using side columns	
Exploiting Internet resources (highlighting)	XX
Relief:	
Clicking rapidly	
Reading very fast, carelessly	
Avoidance (difficult website)	XX
DIFFICULTIES	**FREQUENCY**
Grammar (relative pronouns, terminology)	XX
Idiom	X
Irony	X
Memory	X
Pronunciation	XXXXXXXXXXX
Technology (Mac)	X
Verbalizing	XX
Vocabulary (regional differences)	X
Word recognition *(klein ≠ kein)*	X
OBSERVATIONS	
Student does task with enthusiasm, is pleasantly surprised by online translators.	
Recognizes differences.	
Tries them out and evaluates them like a linguist.	
Good grammar analysis, although she lacks grammatical terms to describe it.	
Does not pronounce well, and is often unsure, even in English (e.g. babelfish)	
Very focused on task, wants to do everything right.	
Student sums up contents of text before she asks about unknown words!	
Good reading strategy!	
Positive attitude to learning.	
Wants to use translator in order to "refresh her memory", not to save time and work.	
EMERGING THEMES	
Teacher scaffolding:	
correct pronunciation, provide background knowledge	
clarify task, explain difficult words, give grammatical explanation	
advise about learning tools, e.g. dictionaries	
teacher and student construct meaning together	
Advantages of Internet: new surprising facts motivate, choice	
Disadvantages of Internet: possibility of avoidance	
Individual learning style	
Pedagogical suggestion: Do this task and learn grammatical terms in order to discuss differences.	
Pre-task exercises:	
analyze compounds so that they do not shock so much	
relevance for learner (can use translators in future)	
Linguistic task: consciousness-raising	

Table 9: Synoptic tables of Gail's reading strategies

Gail TASK 1: Trip to Germany (Scanning)	
STRATEGIES	**FREQUENCY**
Text-Based:	
Cognates	XXX
Using spelling/punctuation	
Using word formation	X
Grammar	
Translation	
Word-for-word reading	X
Reader-Based:	
Predicting contents of text	
Scanning	XXXX
Skimming	XXXX
Guessing unknown words	XXXXXXXX
Using text structure	
Using illustrations	XXXXXXXXX
Connecting text to background knowledge	XX
Relating to classroom	
Relating to personal experience	XXXXXXXX
Making inferences	XXXXXX
Summarizing information	XXXXX
Metacognitive:	
Previewing text	
Continuing to read	
Skipping words/passages	XX
Evaluating guessed words	
Evaluating contents	
Comparing L1 and L2 / C1 and C2	
Monitoring	
Rereading	
Repair	
Focusing on task	X
Focusing on task (stays on website instead of clicking to next)	X
Focusing on task (uses information found incidentally for task)	X
Focusing on task (goes back to task, not interested in explanations)	XX
Supporting:	
Asking about unknown word	XXXXXX
Asking about German culture	XXX
Reading aloud	X
Subvocalizing	
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	XXXXXXX
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXXXXXXX
Clicking because of recognized word	XX

	Clicking because of task requirement	XX
	Going back and forth on website	X
	Orienting oneself on website	X
	Trying out different links	
	Evaluating text for usefulness	
	Evaluating link / website	XXX
	Supporting:	
	Using icons	
	Using pulldown menu	XXXX
	Using search button	XXX
	Using side columns	X
	Exploiting Internet resources	
	Relief:	
	Clicking rapidly	XXXX
	Avoidance (first best thing)	XXX
	Avoidance (uses info although looking for something else)	XXXX
	Avoidance (giving up search)	XXXX
DIFFICULTIES		**FREQUENCY**
	Culturally different website (layout, indirect info, different concept of tourism)	XXXXXXX
	Getting lost on websites	XX
	Idiom	XX
	Irony	
	Lacking cultural knowledge (geographical; political)	XX
	Memory	XX
	Overall meaning of sentence	XXXX
	Spelling	X
	Technology (umlaut)	XX
	Vocabulary (false friends, specific, regional, navigating)	XXXXXXXXXXX
OBSERVATIONS		
	Student has gone to Germany before; therefore this task has personal relevance for her.	
	She also hopes to go to Germany as an au pair in the summer.	
	She becomes especially engaged in the task when she is able to buy things on the web.	
	Her vocabulary and grammar are not sufficient to construct meaning of most texts on her own.	
	She uses mainly pictures for comprehension.	
	Superficial reading, but task was scanning so that might be okay.	
	The teacher had to help with navigating vocabulary. If teacher had not been present, student might have given up some of the searches.	
EMERGING THEMES		
	Personal relevance, Individual learning styles	
	Speed / avoidance	
	Teacher scaffolding: help with cognates, confirm guesses, provide background knowledge/cultural perspective, guide analysis, guide student to get overview first, explain dialect, help with menu options	
	Background knowledge often consists of stereotypes	
	Pedagogical suggestion: prepare navigational vocabulary; have students look at websites	
	Value of think-alouds, interviews: find out about culturally different perspectives and reasons for clicking	
	Specialized, regional vocabulary	

Gail TASK 2: Music (Skimming)	
STRATEGIES	**FREQUENCY**
Text-Based:	
Cognates	XX
Using spelling/punctuation	
Using word formation	XXXX
Grammar	X
Translation	
Word-for-word reading	XXXX
Reader-Based:	
Predicting contents of text	
Scanning	XX
Skimming	XXXXXXX
Guessing unknown words	XXXXXXXXXXXXXXXXXXX
Using text structure	
Using illustrations	
Connecting text to background knowledge	XXXXXXX
Relating to classroom	XX
Relating to personal experience	X
Making inferences	XXXXXXXXXX
Summarizing information	X
Metacognitive:	
Previewing text	
Continuing to read	X
Skipping words/passages	X
Evaluating guessed words	
Evaluating contents	XXXXX
Comparing L1 and L2 / C1 and C2	XXX
Monitoring	
Rereading	
Repair	
Focusing on task (to get it done)	XXXXX
Supporting:	
Asking about unknown word	XXXXXXXXXXXXXXXX
Asking about German culture	X
Reading aloud	X
Subvocalizing	
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	XXXXX
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXXXXXXX
Clicking because of recognized word	
Clicking because of task requirement	X
Going back and forth on website	XX
Orienting oneself on website	
Trying out different links	X

Evaluating text for usefulness	
Evaluating link / website	X
Supporting:	
Using icons	
Using pulldown menu	
Using search button	
Using side columns	XXX
Exploiting Internet resources	
Relief:	
Clicking rapidly	XXXX
Reading very fast, carelessly	XX
Avoidance	XXXX
Avoidance (clicking on CD instead of text)	X
Avoidance (giving up)	XXX
DIFFICULTIES	**FREQUENCY**
Bad dictionary	
Culturally different website	XXX
Getting lost on websites	
Grammar (discourse markers, verb, participles, conjunctions)	XXXXX
Idiom	XXXX
Irony	X
Lacking cultural knowledge (geographical; political)	XX
Memory	XXX
Overall meaning of sentence	XXXX
Pronunciation	XXXXXXX
Punctuation	
Spelling	
Task not clear	
Technology	
Text type	
Verbalizing	
Vocabulary (very basic, doesn't recognize cognates, slang)	XXXXXXXXXXXXXXXX
Word recognition	XXX
OBSERVATIONS	
Student says in the beginning of task that this is more within her interest, easier text. But then lacks even basic vocabulary to understand text easily.	
Does not read text out load, probably because she feels insecure about pronunciation.	
Very relieved and proud when she does understand; frustrated when not.	
Got lost in hyperlink structure when she tried to find information about lyrics.	
Guessing the meaning of unknown words is often done but not very successfully, since student lacks threshold of linguistic knowledge to make informed guesses	
EMERGING THEMES	
Question 1 (writing down 3 topics on page) is not a natural Internet activity.	
Students want to click on one artist right away.	
Teacher scaffolding: help with pronunciation, reading strategies, background information, orientation on website, confirmation of student's guesses, explain irony, idioms	

Gail TASK 3: Deutsche Welle (Detailed reading)	
STRATEGIES	**FREQUENCY**
Text-Based:	
Cognates	X
Using spelling/punctuation	
Using word formation	XXX
Grammar	XX
Translation	X
Word-for-word reading	XXXXXXXXX
Reader-Based:	
Predicting contents of text	X
Scanning	X
Skimming	XXXXX
Guessing unknown words	XXXXXXXXXXX
Using text structure	
Using illustrations	
Connecting text to background knowledge	XX
Relating to classroom+C51	X
Relating to personal experience	
Making inferences	XXXXXXXXXXXXXX
Summarizing information	XX
Metacognitive:	
Previewing text	X
Continuing to read	
Skipping words/passages	X
Evaluating guessed words	XXX
Evaluating contents	
Comparing L1 and L2 / C1 and C2	XXXX
Monitoring	
Rereading	
Repair	
Focusing on task (confirming; eager to finish)	XXXXX
Supporting:	
Asking about unknown word	XXXXXXXXXXXXXXXXXXXX
Asking about German culture	
Reading aloud	
Subvocalizing	XX
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	XXXXXXX
Using website structure	X
Metacognitive:	
Clicking because of personal interest	X
Clicking because of recognized word	
Clicking because of task requirement	XX
Going back and forth on website	X
Orienting oneself on website	X
Trying out different links	

Evaluating text for usefulness	
Evaluating link / website	X
Supporting:	
Using icons	X
Using pulldown menu	
Using search button	
Using side columns	
Exploiting Internet resources	
Relief:	
Clicking rapidly	X
Reading very fast, carelessly	XX
Avoidance	X
Avoidance (wouldn't read this type of text)	X
Avoidance (makes do with what she understand)	X
Avoidance (chooses first best article)	X
DIFFICULTIES	**FREQUENCY**
Culturally different website	X
Grammar (separable verb, terminology, negation)	XXXXX
Lacking cultural knowledge (geographical; political)	XXX
Memory	XXX
Overall meaning of sentence	XXXX
Pronunciation	XXXX
Spelling	X
Technology (voice recorder, Mac)	XX
Vocabulary (false friends)	XXXXX
Word recognition	X
OBSERVATIONS	
Student knows important reading strategies, e.g., looking for known words and phrases, previewing the page, etc. But she lacks vocabulary for this type of text (political, formal), so she cannot make use of them. Rather, when it gets difficult, she does word-for-word reading although she knows that is not efficient.	
The topic is not of interest to her, she would have preferred culture.	
She did not use the illustrations, because she was so "concentrating on trying to skim the text". She says she needs to be guided to use illustrations.	
Shows more interest and enthusiasm when she finally understands.	
Makes good inferences on German vs. American perspective.	
EMERGING THEMES	
Teacher scaffolding: help with task instructions, explain words, encourage, introduce reading strategies, confirm guesses, help with pronunciation	
Teacher and student constructing meaning together	
Choice / velocity	
Learning from think-alouds: vocabulary	
Importance of comprehension for motivation	
Researcher influences the reading process: student would have given up on text	
Internet reading perceived to be different from other classroom reading (here: not making use of illustrations)	
Task: state clearly that student should choose international news topic for comparison	
Text type too complex for 4th semester?	

Gail TASK 4: Translation (Linguistic)	
STRATEGIES	**FREQUENCY**
Text-Based:	
Cognates	
Using spelling/punctuation	
Using word formation	X
Grammar	XX
Translation	X
Word-for-word reading	XXXXXXXXXXX
Reader-Based:	
Predicting contents of text	
Scanning	
Skimming	X
Guessing unknown words	XXXXXX
Using text structure (discourse features)	X
Using illustrations	XXX
Connecting text to background knowledge	XXXX
Relating to classroom	X
Relating to personal experience	XX
Making inferences	XXXXXXX
Summarizing information	
Metacognitive:	
Previewing text	
Continuing to read	
Skipping words/passages	
Evaluating guessed words	
Evaluating contents	
Comparing L1 and L2 / C1 and C2	
Monitoring	
Rereading	X
Repair	X
Focusing on task (understanding instructions)	X
Focusing on task (to get it done)	X
Supporting:	
Asking about unknown word	XXXXXX
Asking about German culture	XX
Reading aloud	
Subvocalizing	
SPECIFIC INTERNET STRATEGIES	**FREQUENCY**
Reader-Based:	
Scrolling (=skimming)	
Using website structure	
Metacognitive:	
Clicking because of personal interest	XXXX
Clicking because of recognized word	
Clicking because of task requirement	XXX
Going back and forth on website	
Orienting oneself on website	

Trying out different links	X
Evaluating text for usefulness	
Evaluating link / website	XXXXXXXXXX
Supporting:	
Using icons	
Using pulldown menu	
Using search button	
Using side columns	
Exploiting Internet resources	
Relief:	
Clicking rapidly	
Reading very fast, carelessly	XXX
Avoidance (prefers one website to several)	X
DIFFICULTIES	**FREQUENCY**
Grammar (prepositions, parsing, pronouns, superlative)	XXXXXXXX
Idiom	XX
Irony	X
Lacking cultural knowledge (geographical; political)	XXXXX
Memory	XXXXX
Overall meaning of sentence	XX
Spelling	XXX
Vocabulary (false friends)	XXXXXXXXXXX
OBSERVATIONS	
Student chooses website because she plays water polo herself.	
She sticks to word-for-word translation although teacher points out other strategies (e.g. skipping)	
Lack of basic linguistic knowledge, like "ess-zet=ß"	
Has to ask for very many words	
Student likes the new tool, the new possibility of translating online	
Does not seem very interested in task, is in a hurry (exam following the session), not very concentrated	
Her observations of the translations remain rather superficial.	
EMERGING THEMES	
Choice	
Personal relevance	
Teacher scaffolding:	
provide cultural background information	
show strategy	
explain words, idioms, irony	
show technical possibilities	
force to elaborate (examples)	
Task should be more explicit (question 2).	
Pedagogical suggestion: do dictations for better word recognition and spelling when searching for information.	