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STRUCTURED CHATROOM USAGE IN FIRST-YEAR GERMAN CLASSES

by  
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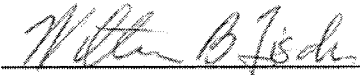
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## ABSTRACT

An abstract of the thesis of Matthias Lampe for the Master of Science in Computer Science presented November 8, 1999.

Title: Structured Chatroom Usage in First-Year German Classes.

Teaching language proficiency means teaching students of foreign languages to communicate about real-world topics with a native speaker of the target language. The Internet offers many possibilities for language learners and instructors to reach this goal of language proficiency. The enormous library of connected information, the ability to communicate easily and fast across the world, and the capability to organize multimedia content in a cross-platform way, are important advantages of the Internet.

The purpose of this thesis is to show that the Internet chatroom program *BabelChat* is a valid educational activity, designed effectively to promote teaching language proficiency, to present the technical design and implementation considerations, and to conduct research about the effectiveness of the tool compared to similar paper activities.

*BabelChat* was designed for first-year language classes, providing the means for contextualized, interactive, communicative and collaborative writing activities for novice and intermediate language levels. *BabelChat* includes an on-line dictionary,

a collection of target language phrases with sentence-builder capability, support for contextualized activities, multi-language support, and an instructor administration Web interface. The automated storage of chat conversations provides an important tool for researchers and instructors.

The technical design is based on an object-oriented client-server application using TCP/IP network communication and is implemented in Java 1.1, to be able to run in a Web browser environment. UML package and class diagrams of the design are presented. The instructor administration interface is implemented as a Web application using Java Servlets.

The results of the research conducted in the first-year German classes at PSU during spring term 1999 need to be taken tentatively and not conclusively due to the high dropout rate of 38% in the subjects and the short period of time the study was conducted. The study was not able to show measurable significant effect of the chatroom activity compared to a similar paper activity. However, the use of *BabelChat* can save a significant amount of classroom time and connects students in their effort to acquire communicative competence in a more interactive and communicative way than a paper-and-pencil activity would allow.



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# Table of Contents

Table of Contents .....	iii
List of Tables.....	v
List of Figures .....	vi
Glossary of Acronyms.....	vii
1 Introduction .....	1
2 Language Pedagogy.....	4
2.1 Survey of Language Teaching Models .....	4
2.1.1 Theories of Language Learning.....	5
2.1.2 Learning Styles and Strategies .....	8
2.1.3 Teaching Methodologies .....	11
2.2 Standards for Foreign Language Learning.....	15
2.3 Current Emphasis on Proficiency.....	17
2.4 Writing for Proficiency .....	22
3 Computer Assisted Language Learning .....	25
3.1 CALL Software Characterization .....	25
3.2 General Research about CALL .....	30
3.3 The Internet and CALL.....	31
3.4 Examples of Teaching Proficiency with CALL.....	34
4 The Foreign Language Chatroom.....	39
4.1 Chatroom as a Language Learning Activity .....	39
4.1.1 Advantages of Chatrooms .....	39
4.1.2 Characteristics of Chatrooms.....	40
4.1.3 Error Correction Issues .....	42
4.2 BabelChat.....	43
4.2.1 Design Rationale.....	43
4.2.2 Special Features of BabelChat.....	44
4.2.3 Evaluation According to Proficiency Principles .....	53
5 Technical Design of BabelChat.....	58
5.1 Use Case driven Analysis .....	58
5.2 Design and Implementation Considerations .....	62
5.2.1 Possible Design and Implementation Approaches .....	62
5.2.2 Advantages of Java.....	63
5.2.3 System Architecture of BabelChat .....	65
5.2.4 Package and Class Structure of BabelChat.....	69
5.2.5 BabelChat Client-Server Communication.....	75

5.3 BabelChat Instructor Administration .....	81
5.3.1 Use Case Driven Analysis .....	81
5.3.2 System Architecture .....	82
5.3.3 Servlet Class Hierarchy .....	85
5.4 Improvements.....	86
6 Research about Chatroom Usage.....	88
6.1 Methodology .....	88
6.2 Subjects .....	89
6.3 Procedures.....	91
6.4 Statistical Analysis.....	92
6.4.1 Grade Changes in Chat and Control Group.....	92
7 Conclusions .....	95
7.1 Future Research.....	95
7.2 Improvements.....	96
Bibliography.....	98
Appendix A UML Diagrams.....	104
A.1 Simple BabelChat Use Case Diagram .....	104
A.2 BabelChat Detailed Class Diagrams .....	105
Appendix B Classroom Surveys .....	108
Chatroom in First-Year German Class.....	108
Demographic Survey of First-Year German Class .....	110
Final Survey of First-Year German Class .....	112
Appendix C Classroom Material.....	114
Development of Writing Skills: Principles and Resources .....	114
Kontexte 17-19 Writing Activity .....	116
Directions for K17-19 “Lieblingslokale in Portland” .....	117
Writing Activity for K20-23 Classroom/Chatroom .....	118
First-Year German – Upcoming Writing Activities (5/99).....	119
First-Year German – Preparing for Independent Writing Activity (5/99) ....	120
Writing Activity (c) for K20-3 Classroom/Chatroom.....	121
Writing Activity for K22-6 (a) Classroom/Chatroom.....	122
Writing Activity for K22-6 (b) Classroom/Chatroom .....	123
Some Reminders about the Basic Past Tense.....	124
Appendix D Data.....	125
Grades of chat group .....	125
Grades of Paper Group.....	126

## List of Tables

Table 6.1 Descriptive statistics of changes in chat group .....	92
Table 6.2 Descriptive statistics of changes in paper group .....	93
Table 6.3 Ranks of chat and paper group .....	94
Table 6.4 Test statistics between groups .....	94

## List of Figures

Figure 4.1 Screenshot of BabelChat Main Window .....	45
Figure 4.2 Screenshot of German On-line Dictionary .....	48
Figure 4.3 Screenshot of German Phrase List.....	49
Figure 4.4 Screenshot of BabelChat Instructor Administration.....	52
Figure 5.1 Refined Use Case Diagram (Student).....	60
Figure 5.2 Refined Use Case Diagram (Instructor) .....	61
Figure 5.3 BabelChat System Architecture.....	67
Figure 5.4 BabelChat Package Overview .....	70
Figure 5.5 List of Classes.....	70
Figure 5.6 Class Diagram (Server Side) .....	71
Figure 5.7 Class Diagram (Client Side).....	72
Figure 5.8 Chat Client State Diagram .....	76
Figure 5.9 Chat Client-Server Sequence Diagram.....	77
Figure 5.10 Refined Use Diagram of BabelChat Instructor Administration .....	82
Figure 5.11 BabelChat Administration System Architecture .....	84
Figure 5.12 BabelChat Servlet Class Diagram .....	85
Figure 6.1 Response towards using technology for language learning.....	91
Figure 6.2 Change of average grades in chat and paper group .....	93

## Glossary of Acronyms

ACTFL	American Council on the Teaching of Foreign Languages
ALM	Audiolingual Method
AWT	Abstract Windowing Toolkit
CALL	Computer Assisted Language Learning
FSI	Foreign Service Institute
GUI	Graphical User Interface
HTML	Hypertext Markup Language
ILR	Interagency Language Roundtable
IRC	Internet Relay Chat
I/O	Input/Output
JVM	Java Virtual Machine
LAD	Language Acquisition Device
LAN	Local Area Network
RMI	Remote Method Invocation
SLA	Second Language Acquisition
TCP/IP	Transmission Control Protocol/Internet Protocol
UML	Unified Modeling Language
WWW	World Wide Web

# 1 Introduction

Teaching language proficiency, i.e. teaching students of foreign languages to communicate about real-world topics with native speakers of the target language, is the commonly considered goal of a foreign language class independent of the class using technology to facilitate learning or not. This goal is defined in detail in the Standards for Foreign Language Learning, developed in collaboration with national language organizations by the American Council on the Teaching of Foreign Languages (ACTFL). There are several non-traditional methodologies, including the Natural Approach, that emphasize active communicative interaction, natural language acquisition and creation of a comfortable classroom environment to lower students' anxieties. This emphasis makes the non-traditional methodologies better suited in helping students to develop language proficiency than the traditional methodologies like the Grammar/Translation Method, the Audiolingual Method or the Cognitive Approach (Omaggio-Hadley, 1993). Research in the field of Second Language Acquisition supports the non-traditional approaches, by showing that language is acquired via comprehensible input and active production, rather than conscious learning of rules (Bruning, Flowerday, & Trayer, 1999; Krashen & Terrell, 1983). In order to facilitate language acquisition it is important to lower the anxiety level of the learner's situation since the affective filter can prevent ideal language acquisition.



When using computers and the Internet for foreign language education and designing computer assisted language learning (CALL) software, it is important to keep the views about language learning theories and methodologies and the national proficiency standards in mind. Technology is only a tool to facilitate language learning and must be integrated in the curriculum and that integration must be based on results from language pedagogy. Taking this into account, well-designed and structured CALL software has a potential impact on language learning. The Internet, with its enormous library of connected information, the ability to communicate easily and quickly across the world, and the capability to deliver multi-media content in a cross-platform way, offers many possibilities for language learners and instructors. Many types of useful and meaningful CALL software using Internet technologies, like electronic mail (E-mail), chatrooms, and the World Wide Web (WWW) exist.

The goal of this thesis is to develop an Internet chatroom program for first-year language classes that allows proficiency-oriented writing activities for novice and intermediate language levels, to present the design and implementation considerations, to evaluate this tool according to proficiency guidelines and principles, and to conduct research about the effectiveness of the tool compared to similar paper activities. The features of this chatroom program, called BabelChat, distinguish it from normal chatrooms like Yahoo Chat or IRCs in the sense that BabelChat helps students in their language production and facilitate the activity for

the instructor. BabelChat was used for contextualized, interactive, communicative and collaborative writing activities in the First-Year German classes at Portland State University over the period of one term. The comparison between the learning outcomes of students using BabelChat and students using paper and pencil for the activities showed no significant change in the average grade between the two groups. Due to the high dropout rate of 38%, which reduced the subjects to 40 students and the short period of time the study was conducted, the results need to be taken tentatively and not conclusively. Further research over a longer period of time, with a larger number of subjects needs to be conducted to get more conclusive results.

BabelChat provides a tool and framework for further research in the use of chatrooms in CALL, including observation of students' language use and progress. The use of BabelChat can save a significant amount of classroom time and allows students to connect in their effort to acquire communicative competence in a more interactive and communicative form than a paper-and-pencil activity would allow. As instantaneous text-based communication becomes even more common such activities will likely grow in importance in foreign-language instruction that aims at the development of real-world proficiency.

## **2 Language Pedagogy**

### **2.1 Survey of Language Teaching Models**

Since the 1940s foreign language teaching has been engaged in a series of struggles about the best and often exclusive way to teach a foreign language. The disillusionments about the serious deficiency of these methods, like the audiolingual method led to a variety of new methodologies in the field of foreign language teaching. These new methodologies were often suggested by professionals of fields other than linguistics, methodology or classroom teaching and emphasize different classroom techniques. However, they all have the common goal of communicative competence and cultural awareness.

In order to understand the different language teaching methodologies it is important to take a look at the underlying theories of language learning. The different approaches taken in the teaching methodologies can be explained by the differences in the theories of learning or acquiring a foreign language.

Two other factors in language education that influence language learning are students' learning styles and strategies. Learning styles are unintentional and automatic patterns and characteristics in the way students learn. Learning strategies, on the other hand, are actions taken by students to facilitate their learning (Bailey, Daley, & Onwuegbuzie, 1999).

### **2.1.1 Theories of Language Learning**

The following descriptions of the theories of language learning, found in Omaggio-Hadley (1993), are by no means meant to be complete, but seek rather to give a brief overview to better understand the teaching methodologies:

The *Behaviorist Theory* comes from the S-R (stimulus-response) school of psychology associated with B. C. Skinner. In this school all behavior, overt or covert, is seen as a response to stimuli, which happens in causal, associative chains. Learning is therefore seen as conditioning, i.e. habit formation or association between a stimulus and a response. These results, taken from animal experiments, were generalized for humans. Language then is seen as a sophisticated response system that is acquired through a complex form of conditioning. Extensive drills and error corrections are very important for reinforcement in language learning. The theory was very popular in the 1940s and 1950s, but was criticized by researchers like Chomsky, who argued that language behavior is more complex than stimulus-response conditioning.

The *Universal Grammar Theory* advanced by Chomsky has a mentalist viewpoint of language learning. Language is seen as a biologically determined capacity and children are seen to have a special language processing ability since birth. This Language Acquisition Device (LAD) has the ability to recognize speech sounds, organize language into a system of structures, determine the possibilities in any linguistic system and construct the simplest possible system from the data to which it was exposed. These constructional abilities are labeled with the term

“generative grammar”. To explain these abilities it is postulated that there exists a set of abstract rules and principles common to all natural human languages, called language universals. Each language has its own parameters and settings of these language universals. Some theorists believe that also students of a second language have access to these principles that help to construct the target language and not only children learning the first language.

The *Cognitive Theory* of language learning comes from the field of cognitive psychology and focuses on general cognitive processes involved in language acquisition. The theory emphasizes knowing rather than responding and, secondly, the mental structure or organization in which new knowledge is integrated. Learning is seen as the result of internal mental activities and the learner is acting, constructing and planning in the learning process. Second language learning is the acquisition of a complex cognitive skill, and learners need to practice and automate subskills in order to become proficient. Integration and organization of subskills into the knowledge base of the learner, which is constantly restructured while learning is in progress, is also an important factor. In order to learn a subskill it is important that the initial controlled processing with attention to the task takes part. This leads to the automatic processing, where no attention is needed to perform the subskill. Some theorists distinguish between declarative and procedural knowledge. Declarative means that the knowledge is conscious and can be articulated, e.g. rules

or word definitions. Procedural knowledge is more the knowledge on how to produce language, and can be conscious or unconscious, automatic or controlled.

The *Monitor Theory* of Krashen is based on the idea that first and second language acquisition are very similar. The theory consists of five central hypotheses that are listed in Krashen & Terrell (1983, p. 26):

1. The *acquisition-learning hypothesis* distinguishes between *language acquisition*, which is a subconscious process, similar to the one children develop when learning their native language, and *language learning*, which is the conscious study of language rules and their applications.
2. The *natural order hypothesis* states that grammatical structures are acquired in a predictable order when the acquisition is natural and does not involve formal learning. The order is not absolute for each learner, but certain structures tend to be acquired earlier and others later.
3. The *monitor hypothesis* introduces the concept of an editor or monitor of the language output that represents the learned competence. The acquired competence is the only initiator for a second language utterance and the monitor functions as a control instrument that can make corrections to the utterance either before or after it is spoken or written. Enough time, active focus on the utterance and knowledge of the rules are required for the monitor to work.

4. The *input hypothesis* states that in order to acquire language the input needs to be comprehensible and a little beyond the language learner's current level of competence. This input is often called  $i+1$ . Speech that is produced in early stages might not be grammatically accurate, but accuracy develops over time with the right input.
5. The *affective filter hypothesis* contains an important element that affective variables like language anxieties, self-confidence or motivation directly related to language acquisition. Optimal affective conditions result in a low affective filter, which allows effective language acquisition. It is therefore important to motivate language learners and create a comfortable environment for comprehensible input to be effective.

Language theorists challenged Krashen's strict distinction between learning and acquisition and argued that the monitor does not work the way it is proposed (Omaggio-Hadley, 1993).

### **2.1.2 Learning Styles and Strategies**

According to Felder & Henriques (1995), "the ways in which an individual characteristically acquires, retains, and retrieves information are collectively termed the individual's learning style". Learning styles are automatic and unintentional characteristics, and are not chosen actively by students when processing information. Learning strategies, on the other hand, are the active techniques used to facilitate the learning process (Bailey et al., 1999).

### 2.1.2.1 Learning Styles

The following five learning style dimensions given by Felder & Henriques (1995) help to characterize students' styles:

1. *The type of information a student best comprehends.* This can be either *sensory* (sights, sounds, physical sensations) or *intuitive* (memories, ideas, insights).
2. *The modality by which sensory information is best processed.* Visual includes pictures, diagrams, demonstrations, and *verbal* means written and spoken words.
3. *The way in which students prefer to process the information.* A student engaged in physical activity or discussion processes *actively*, a student using introspection processes *reflectively*.
4. *The students' progress in understanding the processed information.* *Sequential* means understanding happens in small logical steps; *global* means in large jumps or holistically.
5. *The organization of the information that the student prefers.* The two possibilities are *inductive*, i.e. facts are given and principles are inferred, and *deductive*, i.e. principles are given and applications are deduced.

A student's learning style should not be categorized in an absolute manner by these dimensions but rather has strong preferences towards the poles of these learning style dimensions.



### 2.1.2.2 Learning Strategies

Learning strategies are defined by Chamot & Kupper (1989) as “techniques which students use to comprehend, store, and remember information and skills”. These strategies are used to enhance and facilitate learning. In an effort to organize the different existing learning strategies Oxford, Lavine, & Crookall (1989) give the following six broad strategy categories, which contain specific strategies and behavior. The first three are also classified as *direct* and the last three as *indirect* strategies.

1. *Memory strategies* consist of creating mental linkages, applying images and sounds, reviewing and employing action.
2. *Cognitive strategies* are practicing, receiving and sending messages, analyzing and reasoning and creating structure for input and output.
3. *Compensation strategies* are guessing intelligently and overcoming limitations in speaking and writing.
4. *Metacognitive strategies* are centering one’s learning, arranging, planning and evaluating ones learning.
5. *Affective strategies* are lowering one’s anxiety, encouraging oneself and taking the emotional temperature.
6. *Social strategies* are asking questions, cooperating with others and empathizing with others.

The right learning strategy for the right learning style can make the difference between effective and ineffective language learning. It is therefore imperative to

raise the students' awareness for their learning styles and teach them in different learning strategies.

### **2.1.3 Teaching Methodologies**

The following is a short introduction to the traditional language teaching methodologies, the influences, which can still be seen in the foreign language classroom and to the non-traditional methodologies, being mainly proficiency oriented.

#### **2.1.3.1 The Traditional Teaching Methodologies**

*The Grammar/Translation Method* originated in the study of Latin solely as a written language and gained popularity as a methodology for teaching modern languages in the nineteenth and early twentieth century (Krashen & Terrell, 1983). The main focus is on studying and analyzing the grammar of the target language and on translation. Characteristic is the extensive learning of rules and vocabulary in order to develop reading, writing, and translation skills. Very little time is spent on listening and speaking skills (Omaggio, 1983).

*The Audiolingual Method* is based on behaviorist psychology and structural linguistics and gained popularity in the 1950s and 1960s. The methodology teaches all "four skills", i.e. listening, speaking, reading and writing in this so-called "natural order", which was determined by the results of the structural linguistic, but emphasizes oral communication. Pattern drills, mimicry, memorization and immediate and complete error correction, which are the result of behaviorist

psychology, are the basic concepts of this methodology. Creative language practice is very limited and the teacher plays a central and controlling role (Omaggio-Hadley, 1993, p. 94).

*The Cognitive-Code Method* is based on the cognitive psychology with an emphasis on meaningful learning (students need to understand what they learn) and organization (new material needs to be presented in a way that it relates to the students current knowledge base). This is called the cognitive structure. The learner needs to acquire the knowledge of the grammar rules first before applying them in language generation. Active learning and creative use of the language by the students is encouraged (Bruning, Flowerday, & Trayer, 1999).

#### **2.1.3.2 The Non-Traditional Teaching Methodologies**

*Total Physical Response* tries to create a stress-free environment and supports skill assimilation by stimulating the students' kinesthetic-sensory system where students are carrying out the teacher's oral commands. The instructor uses only the target language for teaching, but students are not forced to speak before they feel ready. It is important that the listening comprehension is developed before students are expected to actively use the language (Lafayette & Strasheim, 1984).

*The Silent Way* reduces the talk of the teacher in class to a minimum in order to promote students' independence, autonomy and responsibility. The students' inner resources, including knowledge base, experiences and emotions are the only resources with which the students should work. Students are responsible for what

they learn and the teacher's role is to guide and facilitate the students' learning (Omaggio-Hadley, 1993, p. 114).

*Counseling Learning* uses techniques from psychological counseling. Students learn the language in a community of other students and the teacher has the role of a counselor who can guide students when they ask for help. Therefore students are taught to rely on their own resources and to cooperate with their peers. Students can freely communicate what they want, first in their native language and then with the help of the instructor in the target language keeping language anxieties to a minimum (Lafayette & Strasheim, 1984).

*Suggestopedia* is intended to enable students to learn a language in a relaxed atmosphere and state. The two principles of infantilization (recapturing the learning capacity of a child) and pseudopassivity (the relaxed physical state of high mental concentration) are the basis of this holistic methodology. The teacher's role is to encourage students to experiment with the language and to help and correct one another (Lafayette & Strasheim, 1984).

*The Comprehension Approach* is based mainly on listening comprehension by introducing a set of 40 lessons, which consists of taped exercises and pictorial workbooks. This approach teaches students the sounds of the target language and inductively teaches basic grammar. This solely comprehensive mode prepares students for the coming acquisition or communicative modes (Lafayette & Strasheim, 1984).

*The Natural Approach* is based on Krashen's Monitor Theory of second language acquisition, and is intended for the introductory stages of foreign language studies to develop students' communicative competence. Krashen & Terrell (1983) give the following five principles of the Natural Approach:

1. *The goal is students' communication skills.* Students should be able to communicate with native speakers. The emphasis is on communication and not grammatical perfection.
2. *Comprehension precedes production.* To develop communicative abilities, language acquisition, through language input, is necessary before being able to use the acquired knowledge.
3. *Production emerges.* Language production starts with incomplete speech and emerges as the language acquisition progresses. Students are allowed to use their native language in responses and are not forced to use the target language before they feel comfortable using it.
4. *Acquisition activities are central.* Since language acquisition and not the studying of rules develops communicative competence most or nearly all of the classroom time is used to provide the students with the right language input. Conscious learning of language rules and vocabulary is done out of class.
5. *Lower the affective filter.* In order to allow language acquisition to be effective the students' affective barriers need to be lowered. This can be

achieved by lowering the students' language anxieties, motivating them and personally involving them in class activities (Terrell, 1982).

Krashen (1999) also argues that direct grammar teaching has only a peripheral effect on the language competence and critically reviews studies that claim to demonstrate the effectiveness of direct instruction in grammar.

## **2.2 Standards for Foreign Language Learning**

In the 1980s the American Council on the Teaching of Foreign Languages (ACTFL), in collaboration with U.S. federal language organizations, developed standards for foreign language learning. ACTFL adopted and modified the proficiency scale and assessment interviewing procedures of the Interagency Language Roundtable (ILR), the “umbrella” organization of U.S. governmental agencies whose activities involve use of foreign languages. The IRL scale and procedure was a refined version of the scale developed by the Foreign Service Institute (FSI), one of the major government schools, in the 1950s (Liskin-Gasparro, 1984). These proficiency guidelines define and describe levels of functional language competence in a comprehensive fashion. They were developed in response to a need for nationally recognized performance and proficiency guidelines, which would help to define actual language proficiency and would facilitate assessment of foreign language learners. These assessment measures are not discrete-point tests that focus on individual skills like vocabulary knowledge or grammatical accuracy. They are performance-based where they assess students'

knowledge and skills by letting them carry out different tasks in communicative contexts using the target language. The students are evaluated according to the generic descriptions of the various levels (Rennie, 1998).

The ACTFL Proficiency Guidelines, which were published in 1986, define four main language levels with subcategories: Novice (Low, Mid, High); Intermediate (Low, Mid, High); Advanced, and Advanced High; and Superior. The characteristics of speaking proficiency of the main levels according to the ACTFL Proficiency Guidelines (ACTFL, 1986) are:

*Novice:* Speakers can communicate only in common, highly predictable daily situations using memorized and formulaic speech. They may be difficult to understand, even by those accustomed to interacting with nonnative speakers.

*Intermediate:* Speakers can ask and answer simple questions and can maintain simple conversations on familiar topics using sentences and strings of sentences. They can usually be understood by those accustomed to nonnative speakers, although some repetition may be needed.

*Advanced:* Speakers can converse fluently and discuss topics of personal and public interest. They can describe and narrate events in the past, present, and future using paragraph-like discourse. They can be understood without difficulty, even by those unaccustomed to nonnative speakers.

*Superior:* Speakers can participate effectively in most formal and informal conversations on practical, social, professional, and abstract topics. They can

explain in detail, hypothesize, and support their opinions. At this level, errors virtually never interfere with communication.

### **2.3 Current Emphasis on Proficiency**

The failure of the audiolingual “revolution” and the development of many new non-traditional language teaching methodologies with their varying underlying language theories led to the need for language teaching that went beyond any methodology and included common and accepted elements found in language methodologies (Omaggio, 1983). The organizing principle in this approach is *language proficiency*.

Language proficiency is not defined through a methodology but through the outcomes and goals of language education. Detailed descriptions of language performance are presented and language competence is divided into various levels that help to identify appropriate teaching methodologies and assessment of students at different stages in their language learning process. These levels are defined in detail in the ACTFL Proficiency Guidelines, which include speaking, listening, reading and writing proficiency.

In the effort to specify what it means to know a language Canale and Swain presented four types of competence as cited in Omaggio (1984):

1. *Grammatical competence* involves the mastery of rules of the linguistic code.



2. *Sociolinguistic competence* describes the extent to which grammatical forms can be used or understood appropriately in various contexts.
3. *Discourse competence* deals with the capability to combine ideas to achieve consistency in form and in thought.
4. *Strategic competence* includes verbal and nonverbal communication strategies to compensate for communication gaps due to interference, distraction, or insufficient language knowledge.

The important question in determining a person's proficiency level is not whether the person is able to communicate but what the person is able to communicate under what circumstances. That is, the language *function* and *context*, and the *accuracy* of the produced language. These principles of function, context and accuracy lead to another categorization of proficiency in the ACFTL guidelines that can help in designing language curriculums. Typical grammatical features that should be mastered, functional tasks to be performed, and contexts and situations that should be handled by persons at different levels are outlined in the guidelines.

In order to apply these principles in language education Omaggio-Hadley (1993, p.77) identifies the following *guiding principles* for organizing and planning language instruction:

1. Opportunities must be provided for students to practice using language in a range of contexts likely to be encountered in the target culture.

- 1.1. Students should be encouraged to express their own meaning as early as possible after productive skills have been introduced in the course of instruction.
- 1.2. Opportunities must be provided for active communicative-interaction among students.
- 1.3. Creative language practice (as opposed to exclusively manipulative or convergent practice) must be encouraged in the proficiency-oriented classroom.
- 1.4. Authentic language should be used in instruction wherever possible.
2. Opportunities should be provided for students to practice carrying out a range of functions (tasks) likely to be necessary in dealing with others in the target culture.
3. The development of accuracy should be encouraged in proficiency-oriented instruction. As learners produce language, various forms of instruction and evaluative feedback can be useful in facilitating the progression of their skills toward more precise and coherent language use.
4. Instruction should be responsive to the affective as well as cognitive needs of the students, and their different personalities, preferences, and learning styles should be taken into account.

5. Cultural understanding must be promoted in various ways so that students are sensitive to other cultures and prepared to live more harmoniously in the target-language culture.

Various aspects of language education are addressed in these principles and there are several ways to implement them in the classroom. Most of those in 2.1.3 presented non-traditional methodologies are suitable for aiming at the goal of proficiency, for example the natural approach. However, instructors do not need to use one methodology exclusively. They should have only the proficiency guidelines in mind when using principles or activities from different methodologies to address the specific needs of their students.

Several researchers argue for the aspects presented in the guiding principles. Terrell (1982) confirms “any approach in which real communication is the basis of class activities will produce students who, within a short time, can function in communicative situations with native speakers of that language”. According to Norman & Spohrer (1996) active learning in communicative situations results in a more learner-centered education. Students learn the best when they are engaged in the learning process. This engagement can create a motivation that cannot be imposed externally, but must come from within the student. Such motivated students can be given the chance to manage their learning. Rivers (1988) points out that the role of the teacher shifts from authoritarian, imperious, and manipulative

towards the role of a facilitator who interacts with the students and whose main concern is to foster an environment in which effective language learning is possible.

Taking affective and cognitive needs of students into account agrees with the concepts of learning style and learning strategy described by Bailey et al. (1999) and Felder & Henriques (1995), which is presented in 2.1.2. The communicative, interactive and cooperative learning creates a non-threatening classroom atmosphere that helps lower anxieties. This is an important point since research shows that increased anxiety leads to a decrease in proficiency (Young, 1991).

Higgs (1985) argues that a pedagogy with proficiency as its goal cannot emphasize an isolated aspect of the target language grammar, including pronunciation, morphology or syntax, but must teach grammar in a more holistic way, which leads to communicative competence. This argument that grammatical competence is an important part in communicative competence is supported by Herschensohn (1990), but she also warns that grammar should not be taught in “lengthy, exception-ridden, and inadequate explanations”, but rather that grammar explanations should be presented in a cohesive way with the communicative classroom techniques.

The proficiency guidelines were designed with the purpose of assessment of language performance. Therefore instructors should consider the description of the communicative competence of a student at a certain level when designing language

tests and evaluating students' performance on them. Teaching for proficiency, but using traditional assessment tools will not reflect the students' communicative abilities in the test results and will lead to misleading indicators of the students' performances.

## 2.4 Writing for Proficiency

Oral proficiency plays an important part in language education since most communication happens through speech. However, the ACTFL Proficiency Guidelines also describe communicative competence for reading and writing. Since the activities described in this thesis are writing activities the following paragraphs take a more detailed look at writing for proficiency.

Dvorak (1986), as cited in Omaggio-Hadley (1993, p.290), distinguishes between *composition*, which focuses on effective development and communication of ideas, such as reflection about the task, information gathering, note taking or revising, and *transcription*, which focuses on the form and describes the actual transcription of the material. The different writing tasks can then be described as being in the continuum between transcription (more mechanical activities) and composition (more complex activities).

Magnan, as cited in Terry (1989), lists two basic purposes of writing in the second language classroom. One functions as a *support skill*, e.g. exercises to practice grammatical forms, vocabulary and spelling, and the other as a *communicative skill*. Most of the writing activities in traditional classrooms fall in

the first category and are mainly aimed at training accuracy and grammatical competence.

Communicative writing activities, which present language in a realistic and meaningful context, appropriate to the students' level of proficiency and oriented by the students' needs, allow most students, even at the novice level, to be engaged successfully in these activities. Students at these lower levels should be made aware of the fact that the sophistication of writing at the beginning of their studies cannot be equivalent to their abilities in their native language. This can otherwise lead to frustration on the side of the students who recognize their limitations in expressing themselves in writing.

Writing activities for novices are more oriented towards transcription and are more of a support skill than a communicative skill. However, it is important that the communicative aspect be seen in writing activities as early as possible. Upon progress to higher proficiency levels writing activities will be oriented more and more towards composition and communication. Writing activities in general can be categorized into: correspondence, providing essential information, completing forms, taking notes, and formal papers.

Terry (1989) gives an example of a communicative writing activity that is situated in a realistic context and can be sequenced according to the students' proficiency levels. It has the form of a correspondence between an instructor and a student on a language exchange program. Since open-ended activities are difficult

for beginner levels, the first sequence in the activity requires the student to write a telegram to the teacher, which does not require writing complete and correct sentences. The next stage is a postcard, which is written in present tense and focuses mainly on the daily routine. When the student progresses further he or she is asked to write a letter to the teacher, which involves the use of past tense and longer paragraphs, but the content still focuses on the student.

It is important that the instructor give the student feedback about the writing activities, but researchers' opinions on the form of feedback differ. Some argue that feedback should concentrate primarily on content and not form, but others insist feedback include both content and form. Research in this field currently is contradictory. Consensus exists, however, that the students should be involved in correcting their own writings, and that a combination of teacher, peer, and self-evaluation leads to more successful results (Omaggio-Hadley, 1993, p.325).

### **3 Computer Assisted Language Learning**

The usage of computers in language learning and instruction is becoming more and more commonplace. New technologies like the Internet, with its connectivity and accessibility, create new potentials for language software. However, it is important to keep in mind that, while technology is a tool that supports and enhances the learning process, it must be integrated into the curriculum and cannot be the sole motivating curricular force (Gonglewski, 1999). Pederson (1987) reminds us “computer assisted language learning (CALL), in and of itself, does not result in more and better learning”. It is the way instruction is reflected in CALL software, e.g. through the context, learning paths, or communicative abilities, that has the capability to affect learners in their language learning process in a positive way.

#### **3.1 CALL Software Characterization**

In the early 1980s affordable personal computers allowed individuals to work independently of a mainframe computers. Education recognized the possibilities of computer-assisted education and the first language software was developed. Initially the capabilities and limitations of microcomputers resulted in their use for presenting material and language drill applications. This reflects the traditional methodology of grammar based and drill instruction. The audiolingual “revolution” resulted in a development of a variety of CALL software types that used



mechanical audiolingual techniques and drill-and-practice. With the development of new non-traditional methodologies, the focus on proficiency, and the enormous technological progress, the potential of computers to help students to acquire language competence is becoming more and more accepted (Wyatt, 1987).

Stevens (1986) as cited in Smith (1987) notes that the majority of CALL software published by language instructors is often technically primitive and reflects the problem that most instructors' programming skills and knowledge are limited. On the other hand, CALL software developed by professional programmers uses the latest technologies and capabilities, but often lacks sound language pedagogy or presents inappropriate language learning models.

Cooperation between language instructors and professional program developers is necessary to achieve the goal of language software that makes use of the the latest technology, but is also based on language pedagogy. Pusack (1987) offers a development model of CALL software that includes a team consisting of a subject-matter specialist who is an expert in the context, an instructional designer, and a programmer. This team would often be augmented with other specialists, such as a graphic designer.

In order to foster discussion among instructors using or developing CALL software the Consortium for Computer-Assisted Language Learning (CALICO) was formed in the early 1980s to serve as a discussion forum for topics related to

Computer Assisted Language Learning (CALL). It also publishes a journal and sponsors annual conferences (Smith, 1987).

Existing CALL software can be characterized by a number of categories. A single package can possess several of these characteristics (Wyatt, 1987):

1. *Tutorial*: introduces new material, presentation of language skills and concepts, culture in a connected and dynamic way
2. *Drill and practice*, allow mastery of material already presented
3. *Game*, adding elements of peer competition, scoring, and timing to a wide variety of practice activities
4. *Holistic practice*, providing higher level, contextualized practice activities
5. *Modeling*, demonstrating how to perform a language task
6. *Discovery*, providing situations in which linguistic generalization can be made
7. *Simulation*, learner is placed in a small model or lifelike context, exposed to cultural content, usually performance oriented and emphasis is on comprehension and meaningfulness
8. *Adventure reading* (interactive fiction), offering “participatory” reading materials
9. *Annotation*, providing a wide range of language “notes” (vocabulary, syntax, plot) available on demand during reading or listening activities
10. *Idea processor*, planning and editing outlines

11. *Word processor*, creating and editing writing assignments
12. *On-line thesaurus*, expanding vocabulary, improving writing style
13. *Spelling checker*, guarding against errors during or after writing activities
14. *Textual analysis*, revealing structural and stylistic aspects of written work

The interaction between student and computer can also help in characterizing CALL software and is related to the list of categories given above. Wyatt (1987) distinguishes between the following three approaches:

1. *Instructional CALL* programs present the language material in a highly structured way with often predetermined learning paths. Programs can have a high level of activity, but the student mainly responds to and learns from the program. Examples are tutorial, drill and practice, holistic practice and many games.
2. *Collaborative* programs expect the students to be in an active role and take responsibility for their learning. Students need to make decisions and take initiative in an interactive dialogue with or through the computer. Learning objectives can be expressed in some programs in a very general manner, but can also be very specific as in instructional programs. Examples are modeling, discovery, simulation, adventure reading, annotation, and some games. Group-oriented software, including message boards or chats, is also part in this category.

3. *Facilitative* software contains no language-learning paths or objectives, i.e. contains no direct pedagogical content. Software programs are mainly designed as tools to facilitate the learning process. Examples are word and idea processing, spell check, on-line thesaurus, text analysis.

Instructional software generally reflects the traditional language methodologies, and collaborative software the communicative approach. Instructional software can be a part in proficiency-oriented language learning to train accuracy, especially if it is able to assess individual student's problem areas and provide customized practice in this area.

Independent of the category, CALL software creates learner-centered environments and changes the roles of instructors and students (Gonglewski, 1999). It makes students responsible for their learning and gives them more control over what and how they learn. An example of CALL software, which takes this idea explicitly into account and presents material according to the students' learning strategy is MR. COLLINS (Bull, 1997), developed for Portuguese studies. The program also allows students to change their strategies while learning and trains them not only in language learning, but also in learning strategies.

Another aspect of learner-centered education is collaborative learning. The student is not only responsible for his or her learning, but also for that of his or her peers. Cooperative learning means individual learning efforts contribute to the learning efforts of the peers in contrast to competitive learning where individual

goals can lead to frustration in the goal accomplishment of others (Renie & Chanier, 1995). Language learning is positively affected by collaborative learning, which fosters self-esteem, positive attitude and motivation, provides a social environment for creative learning, and promotes communication (Meunier, 1994). The size of computer groups is an important factor in collaborative learning with computers and varies with different kinds of activities. Too large groups can make communication difficult and can have a negative effect.

### **3.2 General Research about CALL**

When performing research about the usage of new technologies it is important to analyze the specific technology and the specific context in which it will be used. Pederson (1987) warns that results from comparative research studies are usually over generalized and that it is difficult to replicate the conditions of the experiment exactly. The independent variable is often stated too general (e.g. “computer versus traditional method”), and there is no way to explain the differences in the dependent variables.

It is therefore often important to also perform evaluative research to provide evidence that the software is based on an accepted language learning theory and pedagogy. Steffin (1983) as cited in Pederson (1987) offers guidelines that can help in such an evaluation. It is necessary to gather data that relates to specific educational objectives, differentiates between likely variances in potential users, takes the likely variations in instructional settings into account, and documents

opinions of a variety of users concerning the quality of the software. It includes questions such as: “How do learners interact with this new learning environment?” or “How do they exploit the computerized resource?”

These evaluations should also consider language theories and methodologies when assessing learning objectives or learning outcomes of the software. The ACTFL guidelines, explained in 2.2 can help to evaluate CALL. Since language software is a form of language activity, guiding principles for organization and planning language education, as for example listed by Omaggio-Hadley (1993, p.77), and given in 2.3, are another tool in the evaluation.

### **3.3 The Internet and CALL**

The Internet began, under the name ARPANET, as a network project of the Department of Defense in the late 1960s. It grew slowly, connecting several universities together. By the 1980s the military formed its own exclusive network, and the Internet was growing faster and faster. The development of the World Wide Web (WWW or Web) allowed easy, cross-platform location and access of information. The great breakthrough came with the graphic capabilities of the WWW through the development of graphical Web browsers like Mosaic, and later Netscape’s Navigator and Microsoft’s Internet Explorer, in 1993. From this point on the Internet began to grow at a very high rate, and in 1996 more than 37 million people in the U.S. and Canada were using the Internet and the Web (Hoffman, Kalsbeek, & Novak, 1996).

Electronic mail (E-mail), newsgroups and listservs were the earliest forms of communication on the Internet. E-mail allows sending messages and documents to anybody on the Internet who has an E-mail address. Listservs are E-mail subscription services that allow simple communication between a group of people subscribed to a certain list server. Newsgroups are a type of electronic bulletin board and allow persistency of messages posted to certain groups.

Real-time on-line discussions are possible using chat programs, like Internet Relay Chat (IRC) or Web based chat programs like Yahoo chat. People can meet in virtual chatrooms and get engaged in conversations with the group. Recent programs allow real-time audio and video communication like CU-SeeMe or Microsoft's NetMeeting. Virtual Realities allow persons to move around in three-dimensional worlds, chatting to other persons and exploring and creating the world (Starr & Milheim, 1996).

These communication technologies are also commonly used in foreign language instruction. E-mail is often used for electronic pen pal projects and electronic journals, and for supportive communication between instructor and students. Listserv, newsgroups and chats allow interactive writing activities that engage students in group discussions. Audio and video communication allows the distribution of authentic material and conversation with native speakers (LeLoup & Ponterio, 1998).

The hypertext nature of the Web with its Hypertext Markup Language (HTML), the ability to include graphical content, video and audio into Web pages, and the ability to add advanced functionality using the scripting language JavaScript or the programming language Java, creates a multimedia environment, ideal for language instruction.

Search engines on the WWW, i.e. programs that search for Web pages containing certain information, allow easy search and access to authentic language material all over the world. Instructors can incorporate different materials on the Web into their courses or certain activities making them easily accessible for the students (Collis, 1996). The Web also makes important information about language teaching and pedagogy available for instructors (LeLoup & Ponterio, 1998).

Opportunities for language learning offered by the Internet are:

- Fast and easy communication that helps connecting language learners all across the world,
- a network of enormous information and material that is easily searchable and accessible, and
- cross-platform access of multimedia content.

The Internet helps connecting learners with other learners or native speakers of the target language that would otherwise not have the chance to communicate with each other. This is the case especially for students of higher language levels in less populated areas where language classes tend to have very few students, or students



of less commonly taught languages. The awareness of the culture of the target language increases using authentic material on the Web that originates in the country of the target language.

Obstacles that need to be overcome are:

- hardware and software requirements depending on intended use of Internet, i.e. modem, Internet access, browser and multimedia software, and
- time and knowledge, i.e. time to learn the required knowledge on how to use Internet technologies.

Training of instructors and students in Internet technologies and extensive introductions in activities using the Internet are important factors in the success of CALL using the Internet in order to avoid frustration and decrease in motivation.

As was made evident in the beginning of this chapter it is important not to forget that the Internet, as a technology, is a tool to facilitate language instruction and needs to be integrated into the language curriculum. Activities using the Internet should make use of its advantages, but need to be structured, in the right context and proficiency oriented in order to teach communicative competence.

### **3.4 Examples of Teaching Proficiency with CALL**

The following is a selection of CALL software and activities using computer technology and the Internet for teaching language proficiency. They are consistent with the principles that were formulated in 2.3.

ELIZA, developed in 1966 at MIT, can carry on a plausible conversation with a human typing at a terminal simulating the role of a psychotherapist. The program is limited but depending on programmed patterns the ELIZA creates the illusion of understanding sentences and returning meaningful answers. This is an early example in natural language processing. An application for language learning is a different version of ELIZA called LIESL that was used at Pomona College. Kossuth (1984), as cited in (Underwood, 1987), explains that the program uses a script that contains patterns and words for a special context, during a conversation. Students, during the usage of the program, were required to turn in the printouts of their conversations for the teacher to keep track of the students' learning. This teacher observation is important since the program is limited and has no understanding of the meaningfulness of the students' sentences. The program is contextualized, interactive and can help students acquire proficiency in writing especially for beginner levels. Programs for higher levels require a better language processing module and need to parse and analyze students' sentences in order to understand meaning and give accurate answers. An example is JUEGOS COMUNICATIVOS, which was developed in connection with a Spanish textbook (Underwood and Bassein 1985, as cited in Underwood, 1987). The understanding is limited to certain mini-worlds and the program is able to guide a conversation about differences in pictures displayed while the student is doing the activity and give feedback about errors made by the student. Several other

programs of this type exist that are different in the contexts they understand and the ability of feedback about accuracy.

Adventure reading games like ZORK, developed at MIT in the 1970s, are other examples of programs able to hold intelligent conversation. The player takes the role of one of the characters in the story and communicates with the computer in the form of other characters or a narrator while the story evolves. The story evolves around the player and is a highly motivating factor. Programming these games for certain contexts and including certain language features make them another interesting activity for language learning to teach proficiency. SPION, developed for German language learning, is a spy adventure game that has the ability to give feedback about language accuracy and include facilitative language components like a dictionary for unknown words (Underwood, 1987).

Kost (1999) presents two activities using the Web for studying German. The first takes advantage of resources available at the Web site of the Goethe-Institut. Intermediate learners are prepared for reading articles taken from the youth magazine of the German newspaper the Süddeutsche Zeitung with a visual pre-reading activity that let them hypothesize about the content of the article by looking at a picture. The articles themselves contain hyperlinks to more information and explanation and the site also includes an on-line dictionary. The second activity can be used as the basis for an essay assignment and was used at the University of Rhode Island. Students are asked to design an imaginary schedule for a student

living in Germany and then to write the diary of this student for one week. They are allowed and encouraged to use material from the Web like university catalogs, concert, movie or TV reviews and programs, and other authentic information. Both activities use authentic material from the Web about the target culture and are oriented for intermediate levels.

Schulze (1997) demonstrates the abilities of TEXTANA, a software product that teaches students text production in a hypertext environment with guidance of the program during the process. Hyperlinks from words in the text to explanations are given. After completing the reading of the source text the student is asked to proceed to the text production phase. During this phase the program guides the student through the process and responds to goals for the text production interactively set by the student during the process.

CALL software that includes meaning-enhanced exercises is given by Chun & Brandl (1992). The software provides thematic and visual context and highlights the differences in meaning that result from differences in form. The activity is a communicative gap exercise that engages the student in a meaningful interaction and negotiation with the computer about missing information. The student can type complete sentences and the program will give feedback about the whole sentence structure.

A contextualized language learning environment for Spanish, called SALAMANCA, was designed by Bueno & Nelson (1993). It represents a virtual

setting for receiving comprehensible input in spoken and written form through a simulated virtual visit of the city of Salamanca in Spain. The student meets two Spanish children and interacts with them in different kind of activities involving listening to speech samples, reading instructions, and responding or selecting within the limited context. The software contains characteristics of a simulation and adventure game.

## **4 The Foreign Language Chatroom**

### **4.1 Chatroom as a Language Learning Activity**

#### **4.1.1 Advantages of Chatrooms**

Two advantages of the Internet can be exploited in using Internet chatrooms in language education: fast and easy communication and cross-platform access to resources. These are major advantages of Internet chats over LAN based computer-mediated communication. In a LAN special software needs to be installed on each computer that is used for the communication, and it is only possible to connect students locally in the network of the school or university. The Internet removes these barriers and allows computer-mediated communication with anybody who has access to the Internet. The only software the student might come in contact with is a Web browser, which is installed on virtually every system. Special software needed for the communication is usually downloaded automatically without any user effort. Therefore accessing an Internet chatroom is possible from home or computer labs at schools and universities, using any kind of computer model with Internet connection. This kind of global access and communication allows bringing learners from different cultures together practicing not only the foreign language, but also the culture of the target language.

Not only geographic barriers can be overcome, but also barriers between language levels. The Internet makes it possible to bring learners from different

levels, even native speakers, together and let them all benefit from the shared knowledge base (Rankin, 1997).

Chatroom discussions are anonymous in the way that students choose a nickname for the discussion hiding their real identity. For many students, especially shy learners, the anonymity lowers language anxieties and helps strengthening self-confidence, which leads to more writing and better language acquisition (Kelm, 1992).

Some Internet chat software keeps track of the student writing and allows the instructor to give feedback on these chat transcripts to the student. Instructors could also create electronic writing portfolios by analyzing the writings from the chatroom and keeping track of the writing patterns of individual students over an extended period of time, or use them together with other portfolio material for portfolio assessments (DeFina, 1992).

#### **4.1.2 Characteristics of Chatrooms**

Chatroom discussions are, by nature, highly communicative, interactive and collaborative activities, which are ideal in proficiency-oriented education.

(Beauvois, 1992) states that synchronous class discussions on the computer network encourages students to read, think, and write almost simultaneously while the discussion is going on.

Corl (1998) and Beauvois (1997) as cited in (Gonglewski, 1999) argue that synchronous communication as in Internet chats is a conversation and has features

of writing and speaking. Writing in a chatroom is sentence and not paragraph oriented, which leads to a decrease in the composition aspect of the writing activity. The activity is more similar to a speaking activity, but instead of producing an oral utterance student transcribe what they usually would say (DiMatteo, 1990).

This hybrid state of chats might also lead to the skill transfer from written to oral presented by Beauvois (1997) as cited in Gonglewski (1999). More research in this area needs to be done, but if these results can be confirmed computer-mediated interaction like the chatroom not only improve writing skills, but also help improve oral skills through skill transfer.

Feedback presented by students of a Portuguese class and analysis of chat conversation show that students tend to be much more straightforward and open in computer-assisted discussions than in normal classroom discussion. Students that are quiet in class have the chance to express themselves, hidden behind a nickname, without anxieties they might have in a classroom setting (Beauvois, 1992). On the negative side this can lead to conversation that tend to drift away from the context of the activity or might even lead to the use of silly or bad language.

Writing in chatrooms can have a negative effect if the number of participants in a chatroom is too high. The conversation gets confusing, difficult to follow and sentences tend to consist only of simple utterances. An important point, also mentioned by Beauvois (1992), is to encourage students to form smaller more manageable groups if the confusion during an online discussion is getting too high.



### **4.1.3 Error Correction Issues**

One observation of chatroom usage is that without any error correction students can become indifferent towards language accuracy (Heim 1987, as cited in Beauvois, 1992). It is therefore very important to give feedback to the student about errors. However, this should not be done in a too explicit way that would discourage the student's language learning.

The right error correction strategy is important. Factors like comprehensibility, frequency, pedagogical focus, and individual student concerns need to be taken into account when giving feedback about errors. For example, errors that interfere with understanding, errors that show up very often, or errors that lead to misunderstanding or incomplete acquisition should be given priority in correcting. Depending on the individual student's level and knowledge it might be helpful to even correct minor errors if the language level is high.

The way in which error correction should be given is also important after determining, which kind of error should be corrected. Errors can be corrected explicitly, e.g. direct statement to the student that a certain structure is incorrect, or implicitly, e.g. simply underlining or marking sentences with wrong structures in a color different from red. In a chat conversation immediate error correction can interfere with the ongoing discussion. Dr. Kelm, professor for Portuguese, uses a delayed method of giving feedback about errors in a chat conversation, by underlining incorrect structures in printouts of chat conversations, and also allowing students to correct the errors themselves, thus gaining bonus points

(Beauvois, 1992). Another good practice would be to paraphrase a student's sentence in the grammatically correct way.

Feedback given to the students needs to be brief and specific in order to be consulted by the students as Linden (1993) explains and should not exceed more than three lines of text.

## **4.2 BabelChat**

### **4.2.1 Design Rationale**

BabelChat was designed especially for first-year foreign language classes, including students of novice and intermediate levels. The general points discussed in the previous chapter 4.1 also apply for BabelChat as a special Internet chat program. The design of the supportive and facilitative features of BabelChat was oriented to the needs of language learning beginners and based on the theory presented in Chapter 2 and 3.

The requirements of BabelChat were:

1. Easily accessible on the Web from any type of computer
2. User friendly interface and help functions, minimal training effort needed
3. Support for immediate feedback to students and request for instructor's help
4. Extensive support for contextualized activities
5. Assistance to students in sentence building
6. Extensive record keeping abilities and identification of individual students
7. Facilitating instructors administrative efforts with activities

Any multipurpose Internet chatroom program usually fulfills requirements 1 to 3, but requirements 4-7 make the design of BabelChat oriented towards foreign language education.

Requirement 1 made it necessary to have BabelChat running in the Web browser environment, which led to the choice of the programming language Java developed by Sun Microsystems as the implementation language for the chatroom program. An in-depth description of the technical design can be found in Chapter 5.

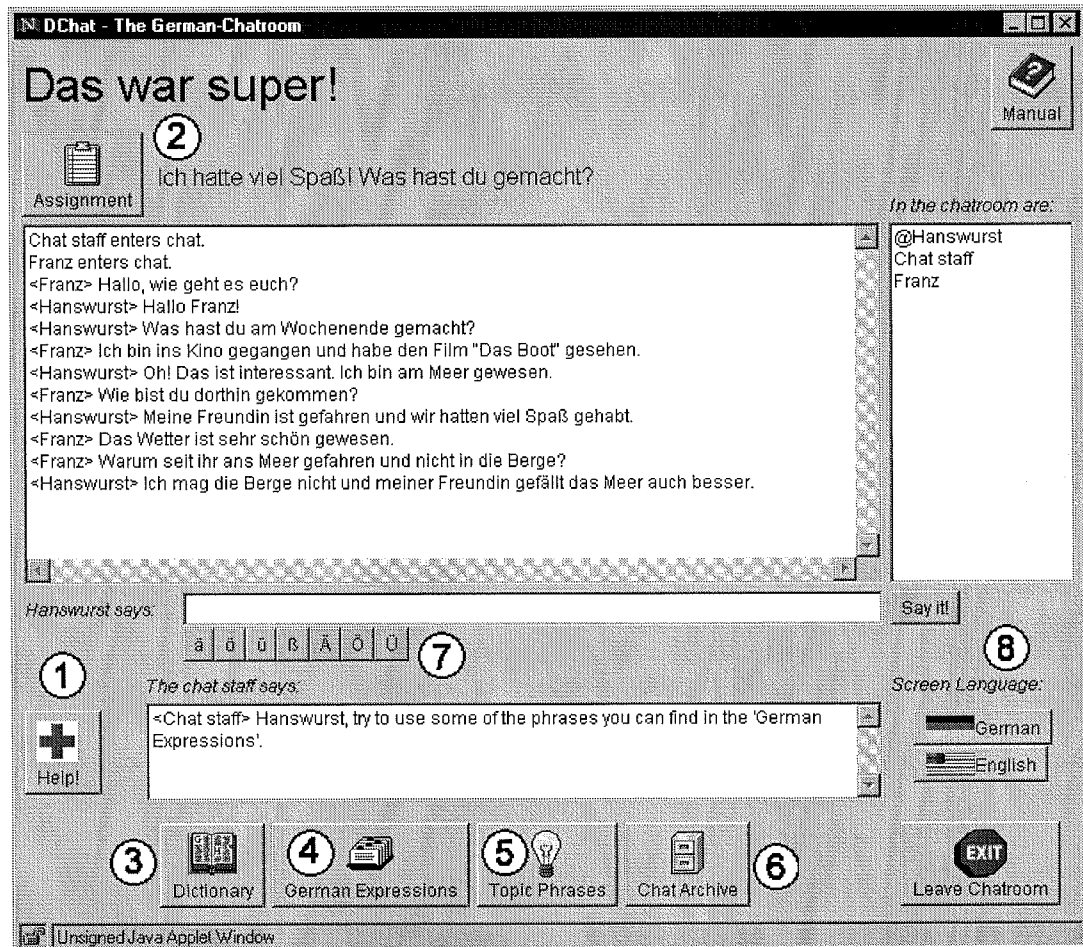
The clear and simple user interface of BabelChat was oriented on a traditional Internet chat, with easy accessible image buttons for the facilitating features. Students familiar with a chatroom program usually do not need training at all to use BabelChat, and students using it for the first time will get comfortable with it very soon. Training is needed to make students familiar with the log in procedure and the special features of BabelChat. If no instructor is available for help BabelChat contains an online help that explains the user interface and the usage of the special features.

The implementation of the next five requirements is given in more detail in the next section since these are the features that facilitate the learning process.

#### **4.2.2 Special Features of BabelChat**

The following list gives an overview of the features of BabelChat. The number of the requirement that encouraged the implementation of the feature is given in

parenthesis. Figure 4.1 shows a screenshots of the actual program where the numbers in the white circles on the picture correspond to the numbers of the feature in list.



**Figure 4.1 Screenshot of BabelChat Main Window**

1. *Private messaging capabilities between student and instructor (3).*

The “Red Cross” button opens a message-input window allowing the student to send a private message to the instructor asking for help. The instructor has a similar feature to send a private message to individual students, giving

immediate feedback to the student, if necessary. Private messages are not displayed in the conversation window. They show up in the special message window below the sentence entry field so they will not disturb the ongoing conversation. Private student-to-student messaging is not allowed.

2. *Support for contextualized activity (4).*

The instructor using the BabelChat Administration Interface can create contextualized activities. The instructor is responsible for the content and context of the activity assignment. This feature only provides the infrastructure and a framework consisting of activity title, two line summary description, full description, and activity phrases and vocabulary. This framework helps the instructor structuring the resources of the activity. The activity title is displayed during the chat session at the top of the window in a big font to remind the students about the topic or context of the activity. The two-line description summarizes the task of the activity, and can give more information about the context. This two-line description is also displayed during the chat session close to the button labeled “Assignment”, which opens a window when pressed with a detailed description about the activity, context and communication tasks. This window also gets displayed automatically the first time a student opens the chatroom to familiarize him or her with the assignment. The activity vocabulary and phrase list provides

useful expressions in the context of the activity and needs to be created by the instructor when setting up the activity.

3. *On-line dictionary* (5).

This feature makes it possible to include a dictionary into BabelChat. Depending on the target language the instructor needs to provide his or her own dictionary entries. For the activities during this research, the Cumulative Glossary of the CD-ROM textbook “Wie bitte?” was used. The screenshot is shown in Figure 4.2. Students can browse the dictionary or directly search for certain words or part of a word. Immediate access to vocabulary is important for students of beginner levels. When providing his or her own dictionary entries the instructor needs to think about the organization of the dictionary. Zaehner, Gupta, & Olohan (1994) provide an introduction in the usage and organization of electronic dictionaries used in CALL activities.

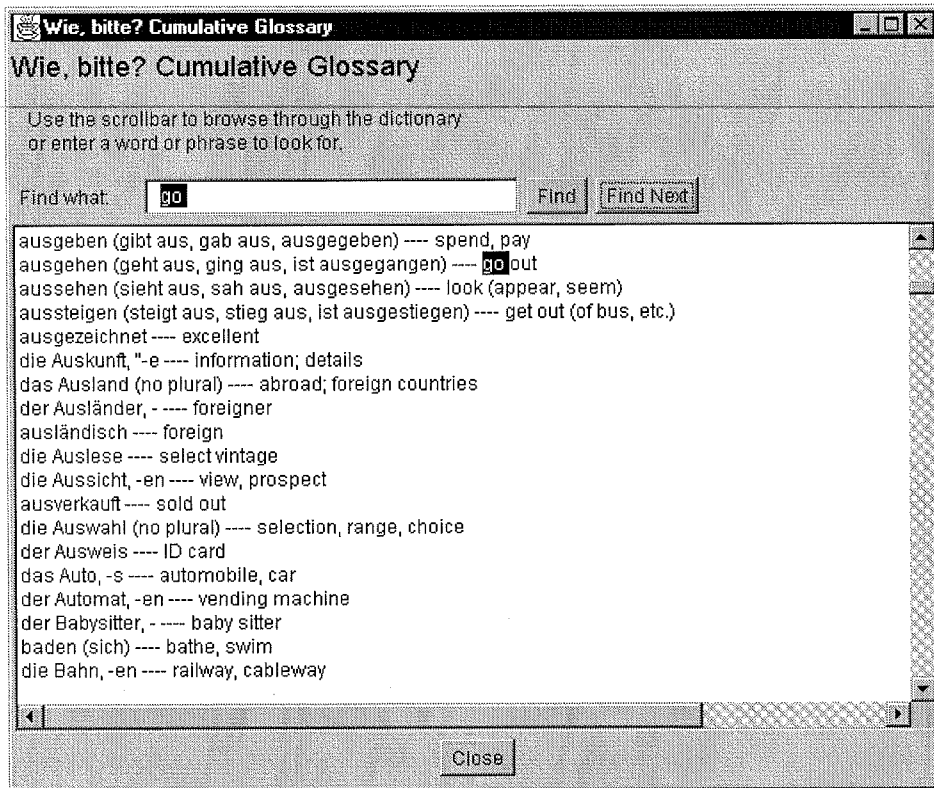


Figure 4.2 Screenshot of German On-line Dictionary

4. *General foreign language vocabulary and phrase list (5).*

When setting up the chatroom the instructor can supply the chatroom with an extensible list of words or phrases in the target language, with a native language translation. Figure 4.3 shows a screen shot of a German phrase list. Students are also able to browse this list, which could be organized according to contexts, or search for special words. Students can transfer a selected word or phrase directly into the sentence production field in the main chat window by double clicking on the selected phrase. This feature allows student to construct sentences using the existing, accurate expressions

from the list. Birckbichler (1982), as cited in Omaggio-Hadley (1993), argues that this kind of sentence-builder activity is especially useful for students of beginner levels. The next two features also provide this sentence-builder capability.

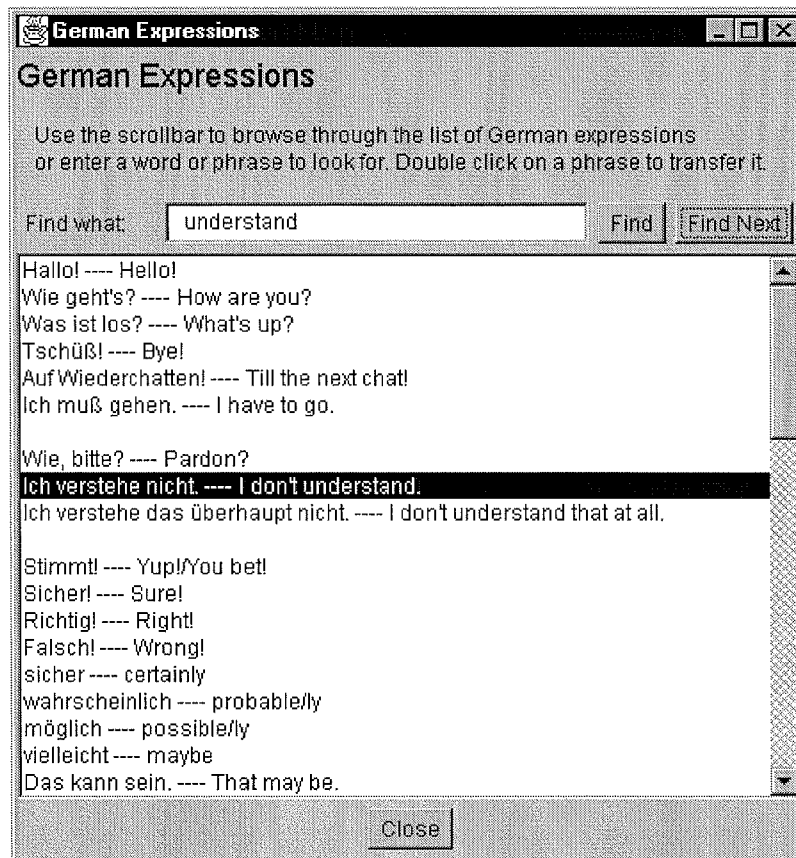


Figure 4.3 Screenshot of German Phrase List

5. *Special vocabulary and phrase list for current activity (4, 5).*

This is a similar list of words and phrases with the same functionality as general list, but depends on the current activity. When creating an activity the instructor also provides the content of this list of expressions to the



activity context. Changing the activity by the instructor results in an automatic change of this expression list.

6. *Chat archive (5).*

Similar to the previous two features this is a collection of phrases and sentences, but not provided by the instructor. Originally the sentences in this archive were produced by students during previous activities, but selected and corrected by the instructor before adding to the archive.

7. *Support for special language specific characters (2, 5).*

With the cross-platform approach comes the problem of typing target language specific characters as the German “Umlaute”. These characters are usually not located on normal keyboards and often, difficult key combinations exist to generate such a character. These combinations usually differ between computer types. A set of buttons right below the sentence production field allows easy insertion of special characters into the sentence in production. Minimal movement with the mouse is necessary.

8. *Localization of screen language (2, 4, 5).*

The students have the possibility to change the screen language of BabelChat while they are writing. This can help to achieve a more authentic environment for students that feel comfortable processing the BabelChat environment in the target language or help native speakers that are invited as

guests to adjust the screen language to their native language if they do not understand the students' native language.

9. *BabelChat course administration interface (2, 6, 7).*

The course administration interface enables the instructor to easily configure BabelChat for the use in his or her class, create and modify activities, manage students, and access the chat transcripts via the Web. However, at this point the interface is still in development and the instructor is only able to create and modify activities and set up the dictionary and phrase lists. A representative screenshot of the BabelChat administration interface, showing the activity menu, can be found in Figure 4.4.

10. *Record keeping ability (7).*

Students' writings are stored electronically in a database for further access by the instructor. Information that is stored with the sentence is the student's nickname and a special identifier that is related to the student's name.

Sentence length in words, the time to produce a sentence (ToSP), sequence number of the sentence in the chat session are also recorded and stored with the sentence. This information gives the instructor the possibility to check the produced sentences of the students in order to give them feedback about their writings according to the strategies discussed in 4.1.3. The gathered data also allows performing of statistical analysis to discover characteristics about chat sessions.

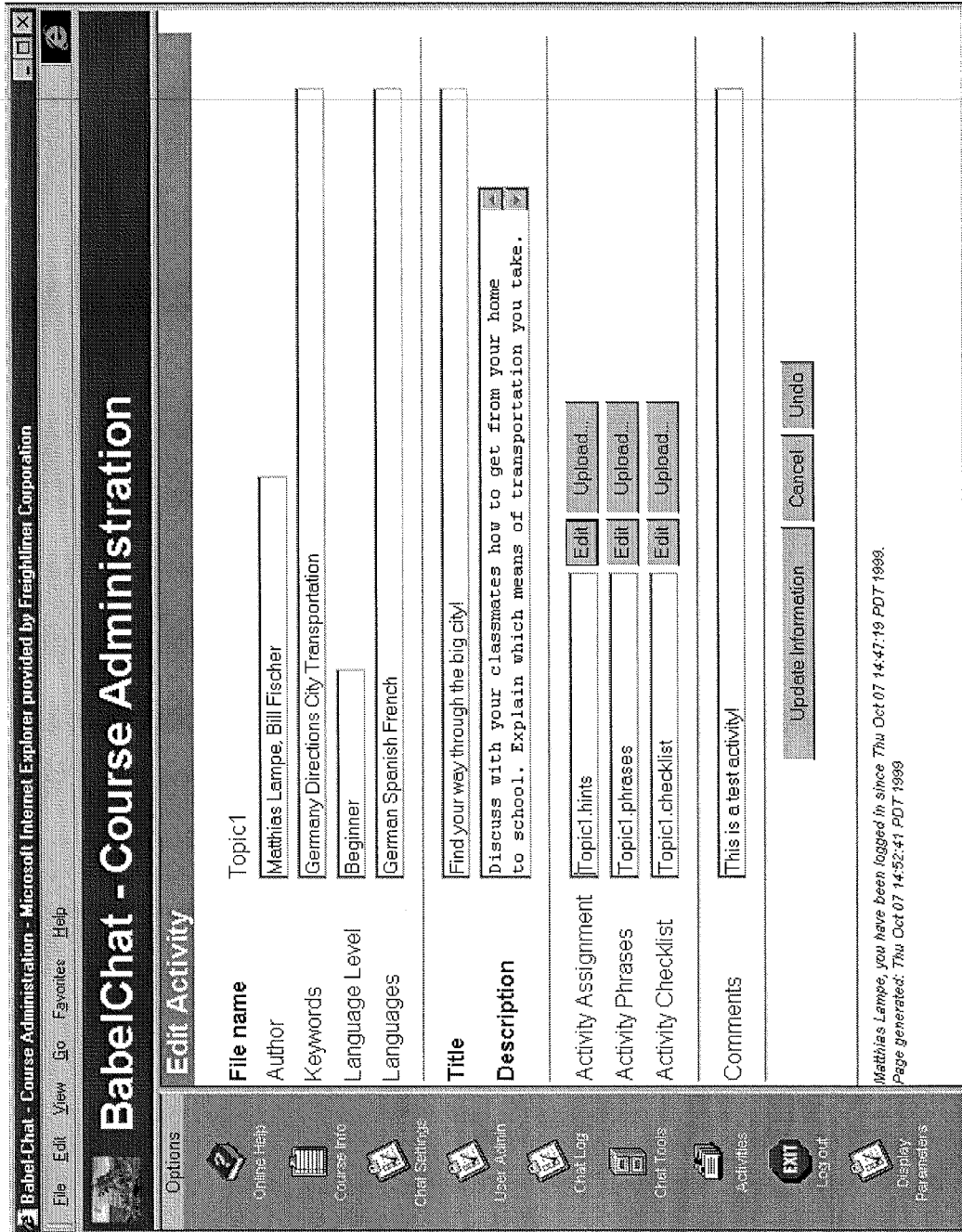


Figure 4.4 Screenshot of BabelChat Instructor Administration

### 4.2.3 Evaluation According to Proficiency Principles

As discussed in 3.2 it is important to perform evaluative research about CALL software as a form of applied research. This section will argue that BabelChat is designed and programmed effectively for the purpose of teaching language proficiency. This claim is based on results and principles that were presented in 2.3 and 2.4, which are based on the proficiency standards and results from language theory.

In 2.3 Omaggio-Hadley (1993) presents five guiding principles that outline general characteristics of a classroom environment that contributes to the goal of language proficiency as described in detail in the proficiency standard. BabelChat partly presents such a classroom environment and is therefore designed effectively to help teach language proficiency. The prerequisite is the design of a contextualized and meaningful exercise in the activity framework of BabelChat.

*1. Opportunities must be provided for students to practice using language in a range of contexts likely to be encountered in the target culture.*

*1.1. Students should be encouraged to express their own meaning as early as possible after productive skills have been introduced in the course of instruction.*

BabelChat supports students by offering an on-line dictionary and several collections of contextualized expressions with sentence-builder capabilities. Students are able to form meaningful sentences even as a novice with limited communicative competence.

*1.2. Opportunities must be provided for active communicative-interaction among students.*

The nature of BabelChat as a chatroom implies active communicative-interaction among students. The instructor should ensure that the number of participants does not exceed five students. Chatroom conversations with too many participants tend to get less active and communication gets less meaningful.

*1.3. Creative language practice (as opposed to exclusively manipulative or convergent practice) must be encouraged in the proficiency-oriented classroom.*

Conversations using BabelChat require students to express themselves in a meaningful way in order to convey messages to the other participants. This interactive communication between students in the chatroom leads to creative language practice.

*1.4. Authentic language should be used in instruction wherever possible.*

Authentic language can be incorporated into the context of the activity. The assignment description and the collections of foreign language expressions should contain authentic language material. If the instructor is participating in the chatroom he should try to encourage the authentic use of language in the context of the activity. Guest participants in the

chatroom sessions from the countries of the target language can be invited to participate in the activities providing valuable language input.

2. *Opportunities should be provided for students to practice carrying out a range of functions (tasks) likely to be necessary in dealing with others in the target culture.*

Students using BabelChat can discuss certain situations and argue about problem solving strategies. They can simulate in a role-play in the chatroom certain real-life situations in the target culture. The instructor should ensure that the contextualized activity provides a wide variety of functions the students should carry out.

3. *The development of accuracy should be encouraged in proficiency-oriented instruction. As learners produce language, various forms of instruction and evaluative feedback can be useful in facilitating the progression of their skills toward more precise and coherent language use.*

As discussed in 4.1.3 feedback is important when using chatrooms to improve accuracy of the language use and ensure language acquisition. BabelChat offers several possibilities for the instructor to give feedback to the students. He could either give feedback while interacting with a student in a conversation, or use the private message feature to contact the student without interaction in the general chat conversation. Feedback with this method can be more direct if necessary. The chat transcripts automatically stored by BabelChat allow the

instructor to keep track of error patterns and give delayed feedback to students or to include indirect instruction about encountered problems in a chat activity.

4. *Instruction should be responsive to the affective as well as cognitive needs of the students, and their different personalities, preferences, and learning styles should be taken into account.*

Using BabelChat allows student to choose a nickname and hide their real identity from other students, or just play another role in the chatroom. This can lead to a higher self-esteem, higher motivation and lower language anxieties. Especially for students usually more quiet in class discussions. The instructor should ensure that his activities contain different tasks and functions to account for students' different learning styles and strategies. The contexts of the activities should also vary to accommodate students' different. During chat sessions the instructor should pay attention to students that tend to participate less in conversations trying to engage them in the activity.

5. *Cultural understanding must be promoted in various ways so that students are sensitive to other cultures and prepared to live more harmoniously in the target-language culture.*

Cultural topics can be easily incorporated in the activities as authentic language material or assignments that deal with cultural differences between the culture of the target language and the students' culture. Discussions about such topics promote understanding and the invitation of native guest speakers in the

chatroom to discuss cultural issues can be a good motivation to engage students in the discussion.

As shown in the comments to the five guiding principles above, BabelChat fulfills all characteristics contributing to the goal of language proficiency. It can therefore be argued that BabelChat in conjunction with a contextualized and meaningful exercise is a valid educational activity designed effectively to promote teaching language proficiency according to the proficiency guidelines.



## 5 Technical Design of BabelChat

The previous chapter introduces BabelChat from the user's point of view. Coming from the requirements in 4.2.1, which evolved from the learner's needs and proficiency oriented language education, the important features of BabelChat are presented with screenshots of the actual program. This chapter presents BabelChat from the developer's point of view. Coming from the requirements and design rationale, the program design and implementation of the overall program and of the important features of BabelChat is shown. This is illustrated in the Unified Modeling Language (UML) use case, class and sequence diagrams.

### 5.1 Use Case driven Analysis

During the analysis phase of BabelChat, use cases were explored in order to define the functionality of the system from the user's perspective. At this stage only functions that are visible to the users are included in the model and the level of detail is more general. The diagrams presented to illustrate the analysis apply the use case model, defined in the UML version 1.1. Actors define a role that a user plays when interacting with the system. In the case of BabelChat there are the actors *student* and *instructor*, which are self-explanatory. Use cases define a function and scenario of parts of the system from the actors' point of view. Refined use case diagrams can contain relationships between use cases. Often one use case is invoked from other use cases, or it is important to model a function as a single

use case. Relationships are described by the stereotypes <<*uses*>> and <<*extends*>>. These relationships are similar to function calls. In the *extends* relationships one use case extends another and might be invoked while the actor walks through the scenario. The *uses* relationships specify use cases that are mandatory to be invoked by other use cases.

Figure 5.1 and Figure 5.2 present the use case model for BabelChat for the actors *student* and *instructor*. These refined use case models were developed from the simple use case model found in Appendix A.1. From the refined use cases it can be seen that the instructor is mainly invoking the same use cases as the student. They both differ in the function for requesting and giving feedback. Most of the functions are not important for the instructor but are included in the model. The following discussion will concentrate on the actor student.

Most of the functions are already listed and explained in 4.2.2. However, the use case diagram shows the interaction between the actor and the system. Important results from this model are the need for user authentication, which also defines a user role and rights in the system, and the functions *Transfer Word/Phrase* and *Type Special Character*, which are invoked by other use cases and therefore need to be linked to other functionality. Another result is the obvious pattern of *Browse* and *Lookup* in the part of the dictionary, phrase and archive. This might lead to a similar design in these components.

# Refined BabelChat Use Cases (Student)

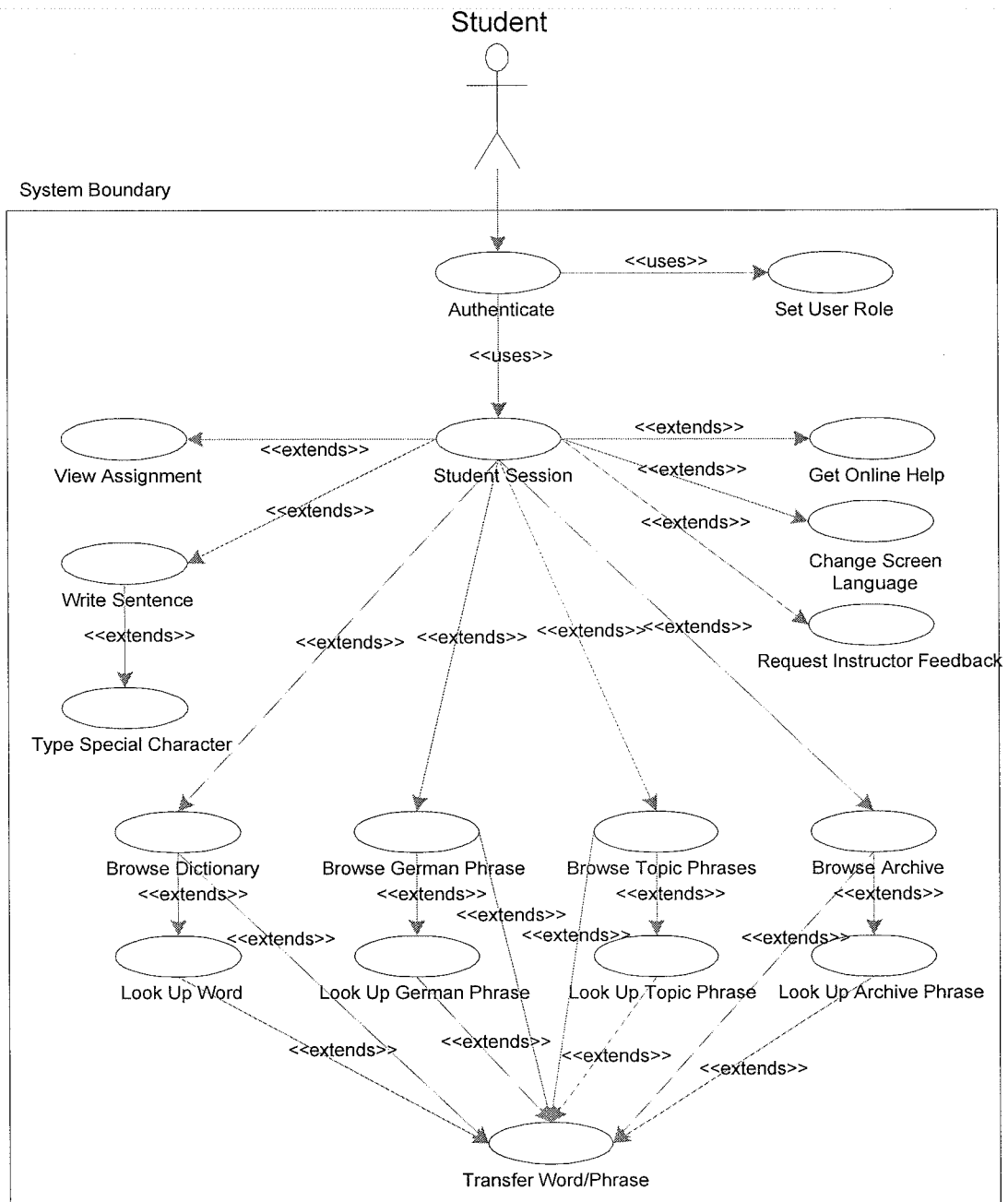
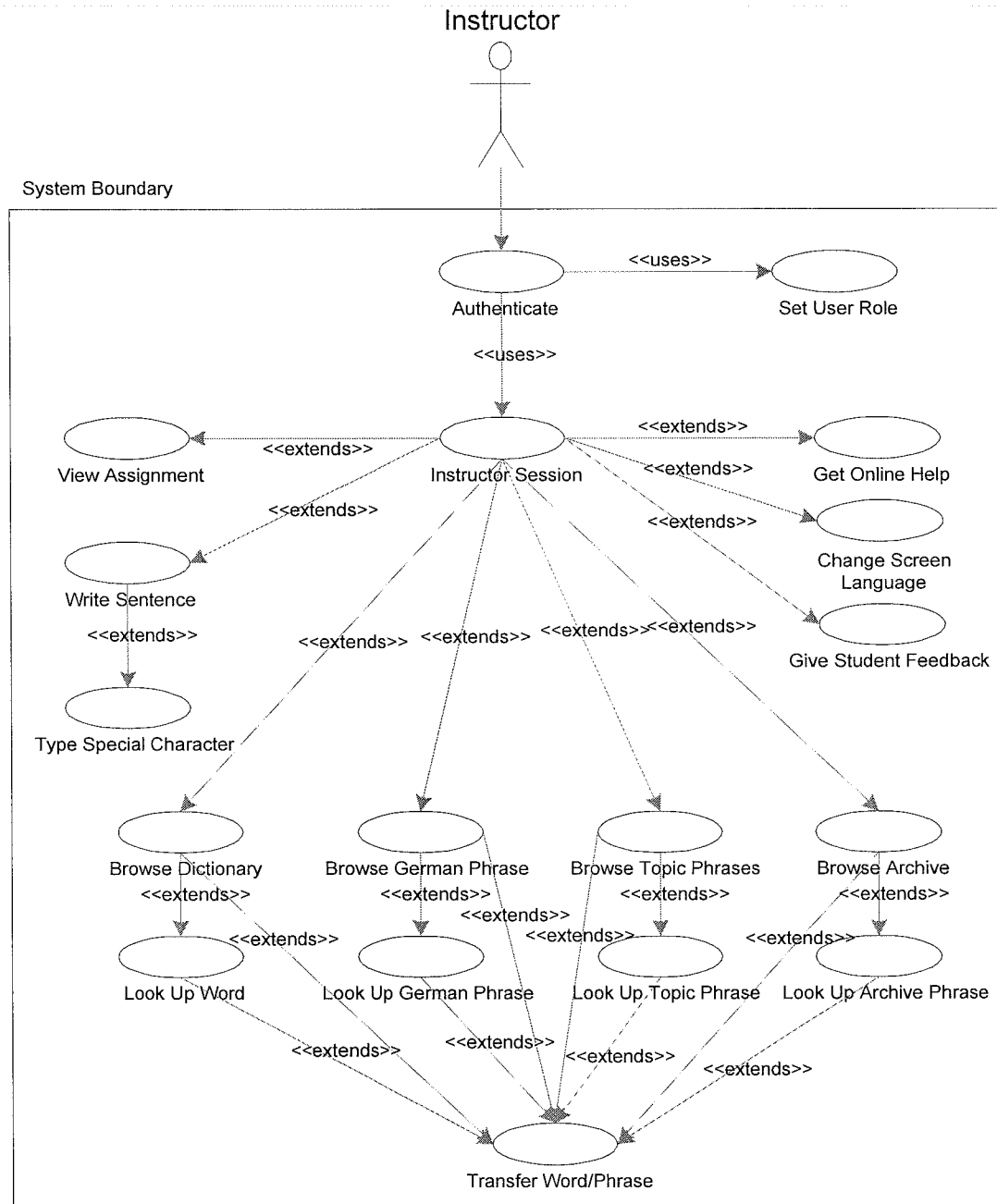


Figure 5.1 Refined Use Case Diagram (Student)

# Refined BabelChat Use Cases (Instructor)



**Figure 5.2 Refined Use Case Diagram (Instructor)**

## **5.2 Design and Implementation Considerations**

### **5.2.1 Possible Design and Implementation Approaches**

BabelChat needs to be platform independent and accessible on the Web. It involves frequent network communication between the participants, and has a variety of complex features. There are several alternative approaches to design the application: as a Web application using CGI/Perl, as a distributed application using DCOM, CORBA, or Java RMI, or as a TCPI/IP client-server model. Since BabelChat needs to be platform independent approaches using DCOM or CORBA are not applicable.

The other approach of designing the chat as a Web application, was considered, but not followed, since the network communication would be very high. Each sentence that is sent to the chat server needs to be broadcast to the participants in the chatroom. Also, the requirements of BabelChat include a variety of different features that would make a design as a Web application fairly complex and hard to maintain.

The approach of using Java RMI was followed, but technical difficulties, including incompatibilities between Java version of different Web browsers and Java's security model for applets, made it impossible to implement BabelChat using this method.

Using a TCPI/IP client-server model in a platform-independent language that is accessible on the Web was the logical approach that was taken.

### 5.2.2 Advantages of Java

The requirements of BabelChat lead to Java as the implementation language.

Java Version 1.1 was selected instead of the current Version 2, because the major Web browsers do not yet support the current version.

The following list presents general features of Java that were important for the implementation of BabelChat. Special Java class library features that helped implementing BabelChat are listed in the context. The list explains the general feature and gives a short description how the feature helped during the design and implementation of BabelChat:

1. *Object-Oriented*

This feature allows communication driven design of the program components, high level abstraction of the data structures, inheritance of functionality, and the use of polymorphism. This also allows the design and usage of frameworks.

Java's programming libraries come with a wide variety of frameworks facilitating the program development. Java's packaging feature allows combining multiple classes in a logical organization, which also facilitate reuse of components. The classes in BabelChat are packaged into the four different packages *server*, *client*, *webclient* and *util*, using another package *component* with general GUI components. Inheritance is used to integrate BabelChat in the Java Abstract Window Toolkit (AWT) framework, and also to be able to generalize special functions like the chat log.

## 2. *Architecture Neutral and Portable*

Java is not compiled in native code, but in Java byte code, which is interpreted by a Java Virtual Machine (JVM) on the user's. This allows Java classes to be executed on any platform that has a JVM. The Java language specification and frameworks, especially for user interfaces, network and I/O operations, are also defined and designed in a platform independent way. The user interface and networking capabilities of BabelChat are platform independent using Java and BabelChat is able to run on different systems, including Windows, MacOS and UNIX.

## 3. *Dynamic and Distributed*

Classes in Java and resources are loaded dynamically. This allows easy loading of program extensions while the program is running. Java also provides a high-level network support, especially for the use with TCP/IP networks and the Internet. BabelChat dynamically loads resource while running and makes extensive use of the Java's network capabilities.

## 4. *Multithreaded*

Java's language features support multithreading in an easy and high-level form. This improves the interactive performance of graphical oriented user interfaces and applications, and allows applications to handle multiple tasks in an organized way. BabelChat's server component utilizes multithreading to handle

more than one client at a time, and the client component uses a listener thread to handle incoming messages without interrupting the program flow.

### **5.2.3 System Architecture of BabelChat**

Figure 5.3 on page 67 gives an overview of the system architecture of BabelChat visualizing the points mentioned below. The multithreaded TCP/IP client-server model, which is able to handle multiple clients at the same time, was chosen as the most promising approach. The client-server model is central to BabelChat's architecture.

#### **5.2.3.1 TCP/IP Client-Server Model of BabelChat**

The TCP/IP server generally goes through the following steps: after the chat server is started, it waits for connections from chat clients on a certain TCP/IP port. When a client connects the server starts a new thread that handles all communication between this particular client and the server, and terminates when the client ends the connection. Java's support for TCP/IP socket communication and multithreading allows a clear design of this approach. Message exchange is reduced to simply sending the data via input and output streams. Java also allows the use of object streams where objects are serialized, sent through the network, and reconstructed at the destination. BabelChat uses this capability and defines its own chat message class, which is sent between clients and server via object streams. Incoming messages, especially chat conversations, are stored in a chat log for further reference. Depending on the implementation, the chat log can be a flat



file, in which the users and the sentences are sequentially added, or a relational database, which provides a more convenient way of querying information of chat conversation.

### **5.2.3.2 BabelChat Applet**

The chat client is started from a Java applet, a special form of Java class that can be executed in the Web browser environment, and is downloaded by the browser. The Web browser needs to include a JVM in order to execute Java applets. An applet can be included in a Web page via a special HTML tag `<APPLET>`. This enables the client software to reside on the server side and get downloaded upon request. The advantages of this approach are that the software can be updated centrally, the user downloads always the current version, and the chatroom can be visited without having BabelChat already installed on the system. The only requirements are an Internet connection and a recent Web browser. The BabelChat applet, *ChatApplet*, also initializes all other class files and resources and starts the chat client. Resource files are downloaded the same way as class files from the origin of the applet. The only restrictions from the Java sandbox security model are that the applet can only communicate over the network with the server it was downloaded from. This makes it necessary to also have the chat server running on the same server.

# BabelChat - System Architecture

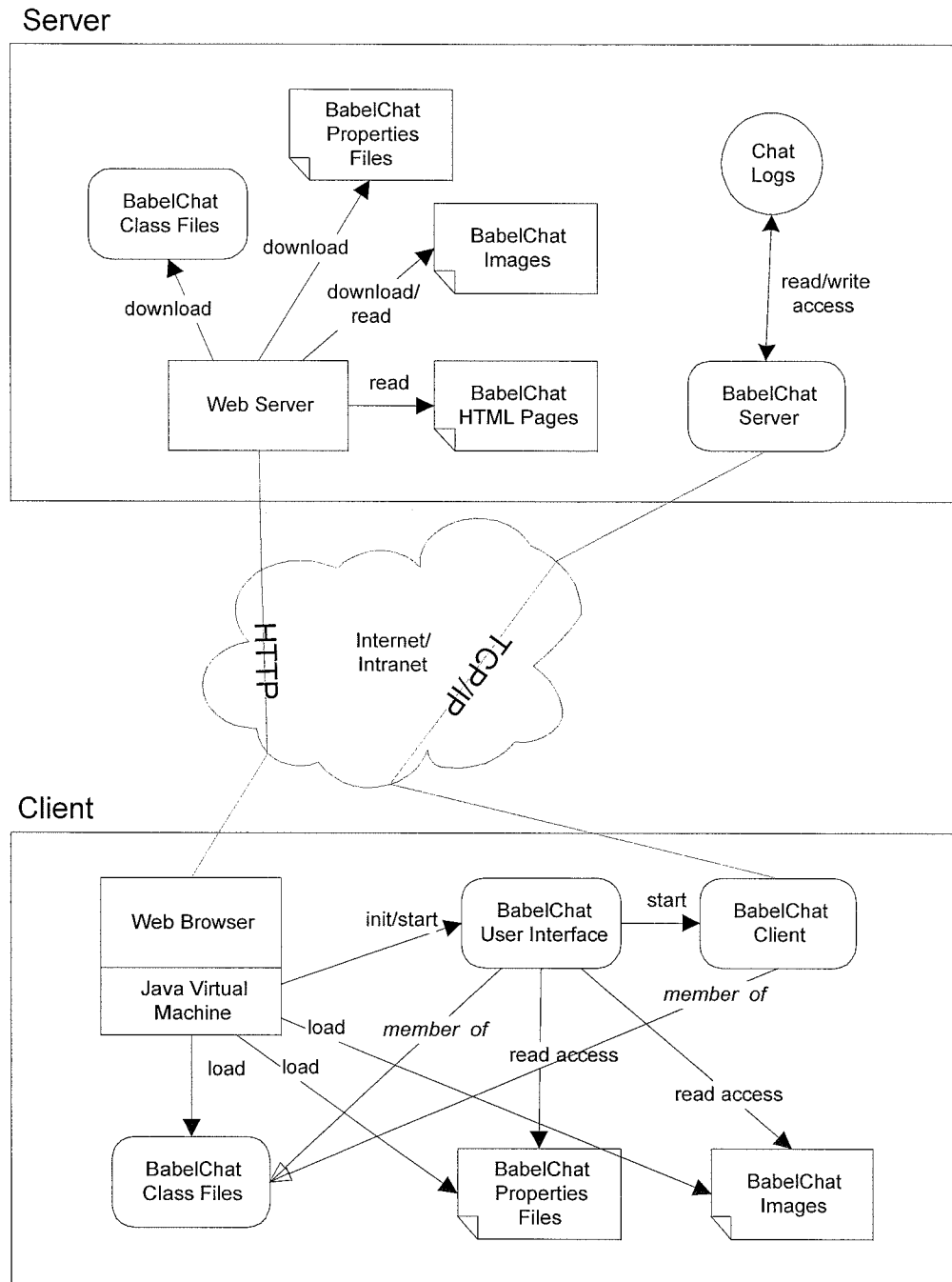


Figure 5.3 BabelChat System Architecture

### **5.2.3.3 Resource Handling in BabelChat**

Resource files used by BabelChat are images and Java properties files. Images can be in the Internet graphic formats GIF and Jpeg. Java properties files are text files that include a list of named properties and values. Java libraries include classes to easily access such properties file without handling network communication, or file I/O. These properties files were used to store the data of the dictionary, phrases and activities enabling them to be easily changed by other programs like the BabelChat Instructor Administration.

Special forms of properties files are properties resource bundles. This approach allows localizing language specific data in a convenient way. Each JVM specifies the default locale that identifies the language and country context. When requesting the content of a properties resource bundle the system automatically searches for the one with the right locale. That means, in order to add support for another language it is only necessary to add another properties resource bundle for this specific locale without changing any program content, if the design consistently applies the localization and internationalization features of Java.

### **5.2.3.4 Localization and Internationalization**

Since BabelChat is a program that will be used in different cultural and language contexts it was logical to apply the localization and internationalization feature. All language specific strings, especially for the user interface are stored in properties resource bundles, and more languages can be added easily. A special feature of

BabelChat is the ability to dynamically change the screen language while using the program. Currently BabelChat includes support for English and German. Spanish, French, and Japanese will be added in the near future.

#### **5.2.4 Package and Class Structure of BabelChat**

In order to better structure the classes of BabelChat, they were organized in four different packages *server*, *client*, *webclient*, and *util*, which are all contained in the main BabelChat package *chat*. Classes were combined according to their functionality.

The *server* package contains the classes for the chat server and the message exchange. The classes implementing the chat client can be found in the *client* package. The package *webclient* contains the classes for the graphical user interface and the main functionality. The classes in the package *util* provide utility methods that are needed by most of the other classes. The package *component* was developed for BabelChat, but can stand as an independent package, containing general GUI components.

Figure 5.4 lists all BabelChat and related packages, and the classes contained in these packages can be found in Figure 5.5. Detailed class diagrams containing methods can be found in Appendix A.2.

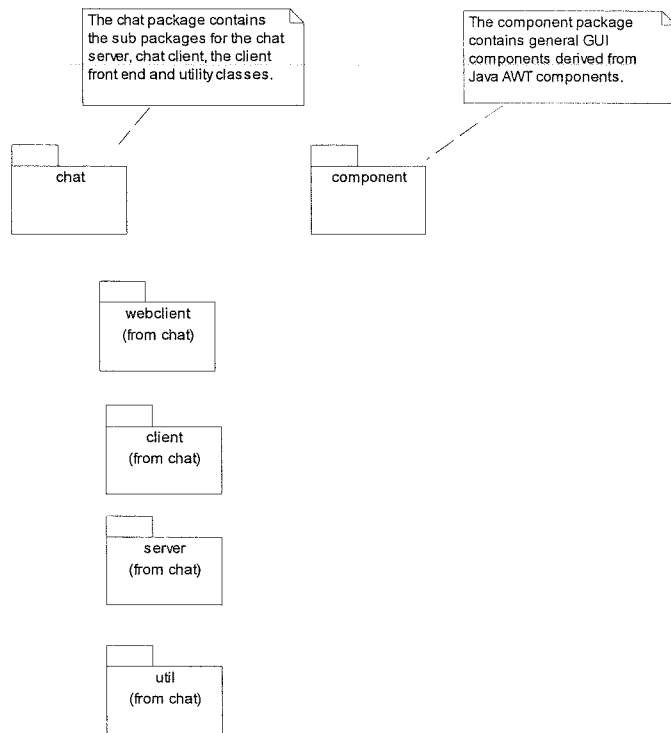


Figure 5.4 BabelChat Package Overview

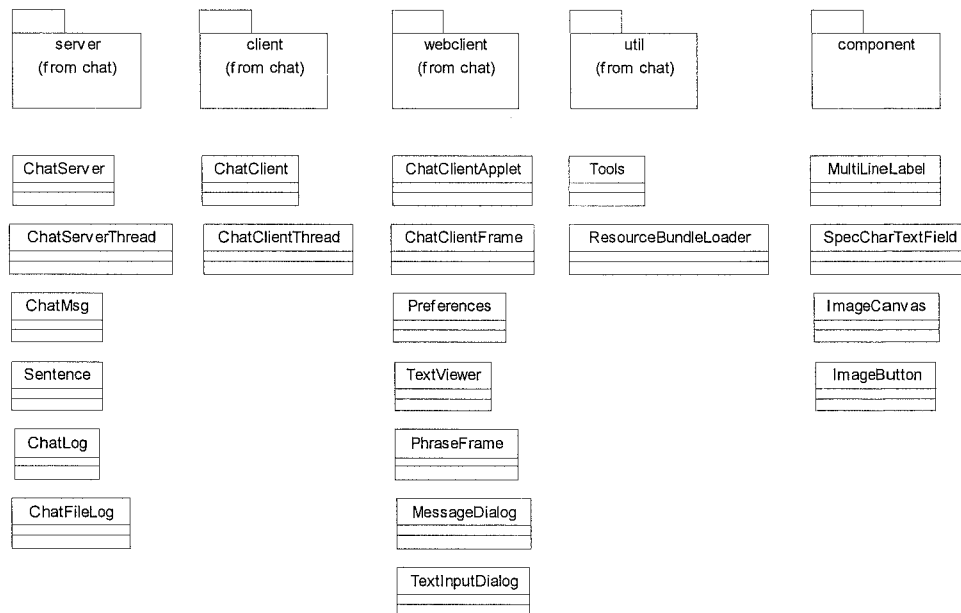
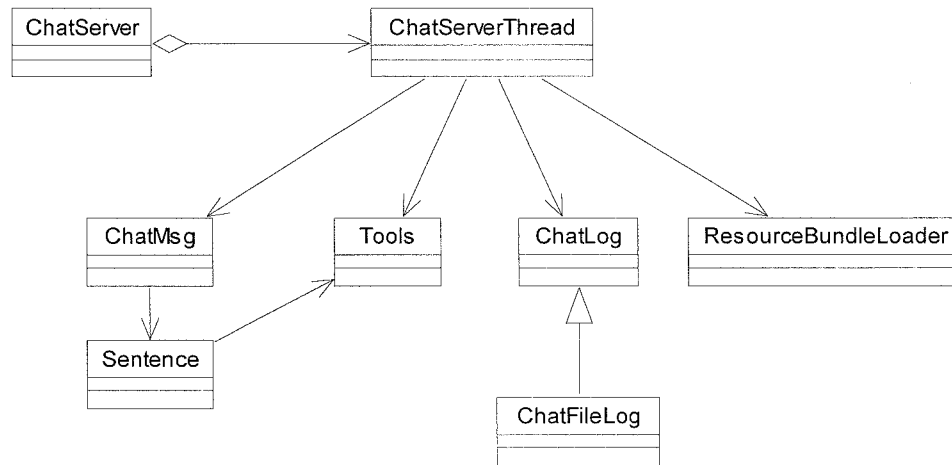


Figure 5.5 List of Classes

To get a better idea on how the classes are interacting with each other Figure 5.6 and Figure 5.7 show the class diagrams with inheritance and object reference relationships. Figure 5.6 gives an overview of the classes involved in the chat server.



**Figure 5.6 Class Diagram (Server Side)**

The earlier described multi-threaded client-server model can be seen in the classes *ChatServer* and *ChatServerThread*. *ChatServer* contains an aggregation of *ChatServerThread* objects, which handle the communication with multiple clients. The class *ChatMsg* is the abstraction of a BabelChat message. It contains the type of message and depending on the type, other information like objects of class *Sentence*. The class *ChatLog* handles storing data about the chat conversation. This class is an abstract class, which only defines the important methods needed by any implementation to store messages. This framework-like structure allows different approaches to a chat log. In the current BabelChat implementation the class *ChatFileLog*, implements the abstract super class and stores data to a flat file.

Another possibility is to use a relational database as a chat log. No further changes would be necessary to other classes. The classes *Tools* and *ResourceBundleLoader* support the other classes with functionality like a time stamp, or the number of words of a string.

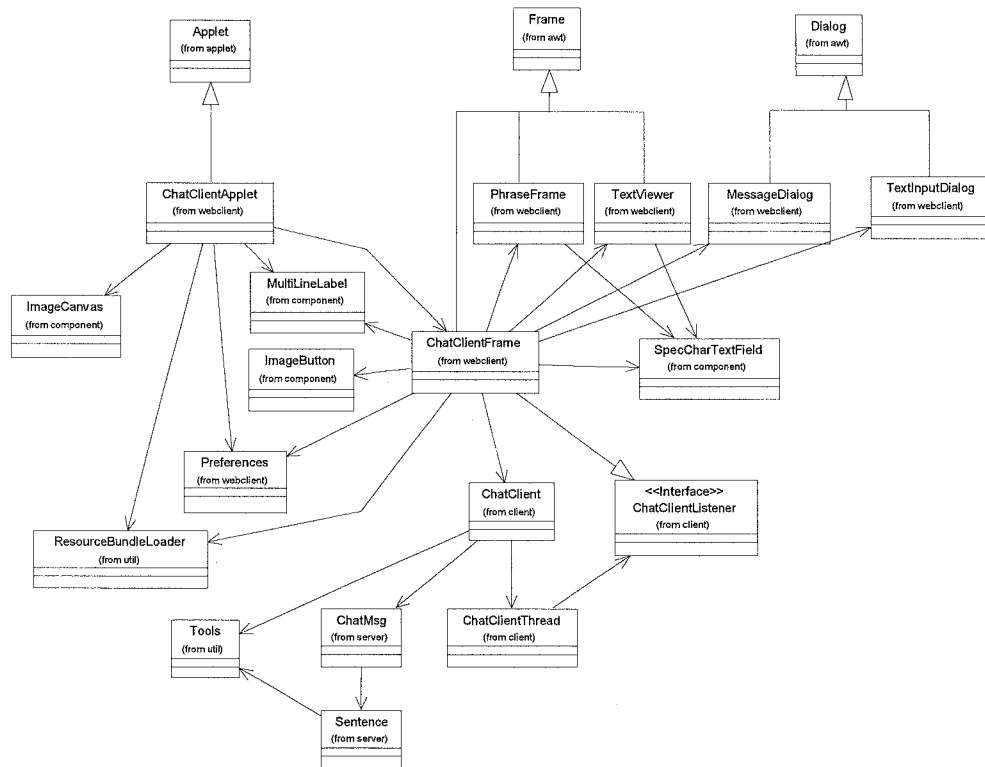


Figure 5.7 Class Diagram (Client Side)

On the client side most of the classes belong to the user interface as shown in Figure 5.7. The central class is *ChatClientFrame*, which corresponds to the use case *Student Session* or *Instructor Session* of the use case model presented in 5.1. This class gets initialized by *ChatClientApplet*, which inherits from

*java.applet.Applet*, in order to be executed in the JVM of the Web browser.

*ChatClientFrame* inherits from *java.awt.Frame*, the main window class of the Java AWT. It implements the main BabelChat window and takes control of most of the user interaction with the BabelChat system.

The classes *PhraseFrame* and *TextViewer* both inherit from *java.awt.Frame*. They implement the functionality for the dictionary, phrase lists, and archive of BabelChat and represent simple text file viewers with either a text area or a list as the main display. The functionality of transferring a phrase to the sentence production field is partly implemented in these classes and the class *SpecCharTextField*, which represents a GUI component that allows text input and supports special character buttons. The classes *MessageDialog* and *TextInputDialog*, which inherit both from *java.awt.Dialog*, are used as information and warning dialogs and for composing the private message for the feedback feature of BabelChat.

The class *ChatClient*, which is constructed and initialized by *ChatClientFrame*, represents together with *ChatClientThread* and *ChatClientListener*, the chat client. *ChatClient* contains all functionality to connect and send messages to the chat server. *ChatClientThread* as a Java thread is started after connecting to the server. This thread waits for incoming messages from the chat server, extracts and propagates the information to the appropriate methods of the class that actually implements the interface *ChatClientListener*. This interface defines the methods



that a class needs to implement in order to receive messages from the chat server. In this case the class *ChatClientFrame* also implements the interface. Therefore messages coming from the server are directly propagated to methods of *ChatClientFrame*, which process and display the information. This listener approach, taken also by the Java 1.1 event model, allows a flexible and fast processing of incoming messages. It would also be possible to have other classes listening to the incoming messages preprocessing or reacting to them. The responsibility for the processing of the incoming messages is taken from the chat client and placed on other methods that are interested in the messages. Logically *ChatClient* also references *ChatMsg*, which is the abstraction of a chat message.

The class Preferences contains global information about properties of the user interface, including fonts, colors and icons. It is referenced by both *ChatClientApplet* and *ChatClientFrame*. *ImageCanvas*, *ImageButton* and *MultiLineLabel* are all simple GUI components of BabelChat. *ImageButton* was developed especially for BabelChat in order to make the user interface more attractive and allows buttons to use icons. This capability is not included in the standard Java 1.1 libraries. The class inherits from *java.awt.Canvas* and is therefore a heavyweight GUI component in contrast to the lightweight components included in the new Java libraries. Due to its general design it can be reused in any other Java application. Appendix A.2 lists all classes in more detail and contains method names.

The advantages of the object-oriented design described above are:

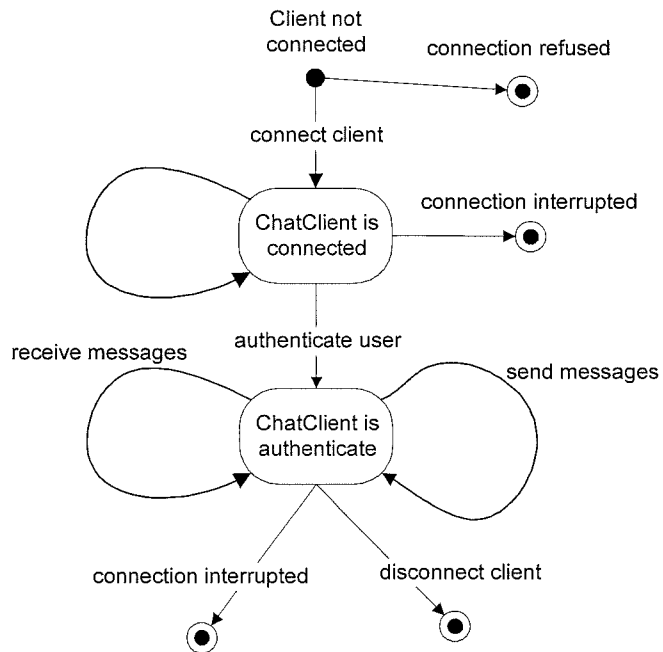
1. Program functions are structured in components according to their responsibilities or as data abstractions, which allows a clear organization of the system facilitating maintenance and reuse. Classes can be easily exchanged for better implementations without changing existing code, if the class interface is not changed. For example, it would be possible to exchange the *PhraseFrame* class for another more advanced class to improve the overall user interface without changing another class. It would be even possible to exchange the whole underlying chat system without changing any user interface related classes.
2. Inheritance integrates into existing Java frameworks and also allows a general implementation independent way of defining responsibilities, which makes future extensions possible without changing any existing code, as in the case of *ChatClientListener*, or *ChatLog*.

### **5.2.5 BabelChat Client-Server Communication**

The logical states of the chat client are shown in Figure 5.8. After loading the chat client is in the *not connected* state. When getting the *connect* message it is possible that the chat server is not active or that other technical problems prohibit the client from connecting at all. When the client is connected it requires the user to authenticate with the server. This can result in the same state if the user information is invalid, in an *end* state if the server interrupts the connection, or in the

*authenticated* state, which represents the normal working state of the client, where it can send and receive messages. It leaves this state when normally disconnecting or in the case the connection was interrupted.

### Chat Client State Diagram



**Figure 5.8 Chat Client State Diagram**

# Chat Client-Server Sequence Diagram

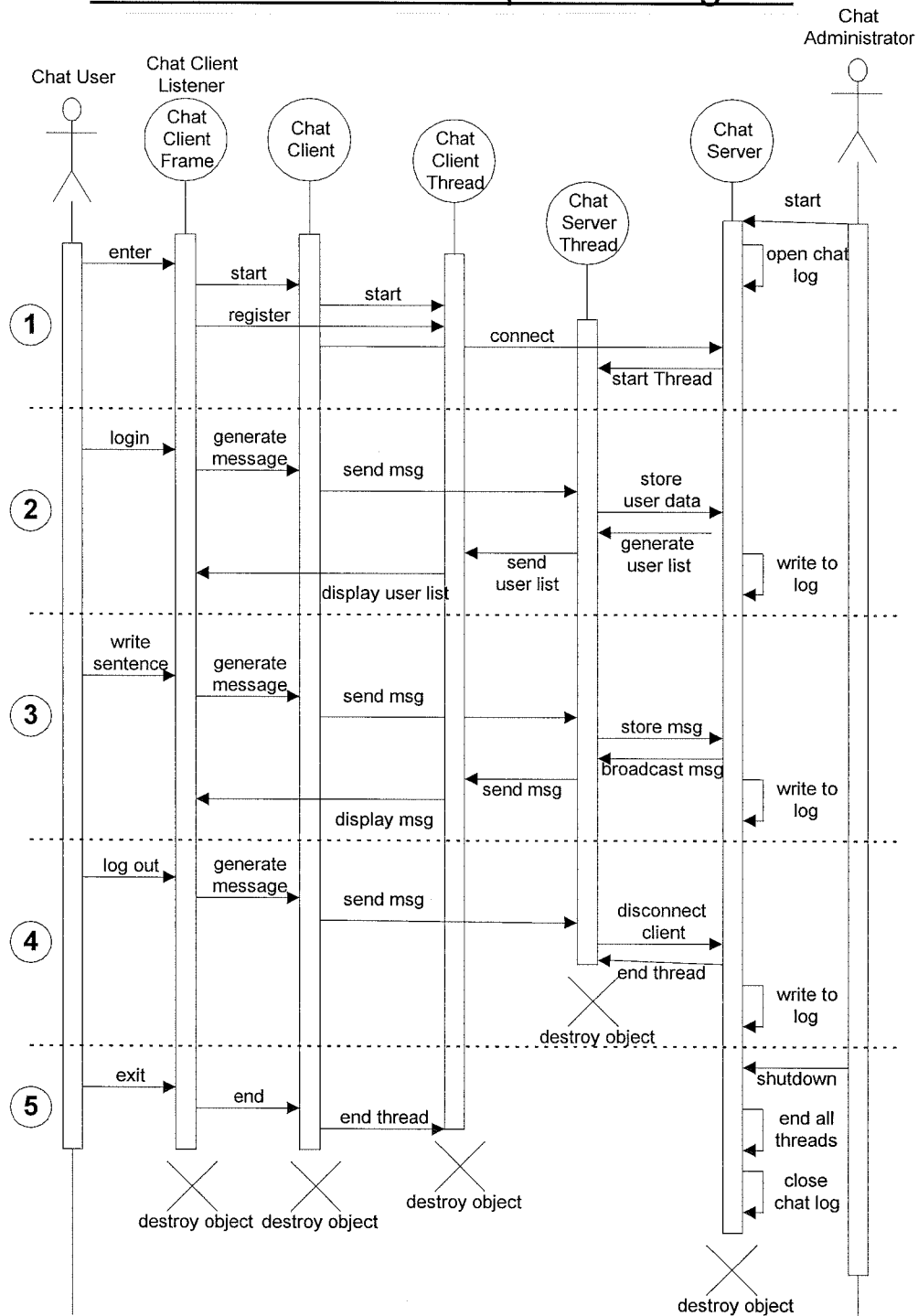


Figure 5.9 Chat Client-Server Sequence Diagram

The sequence diagram in Figure 5.9 goes through a whole life cycle of chat client and server and includes the messages exchanged between the different objects of the client and server part. Coming from the client part, the actor *Chat User* represents the user who interacts with the system through the user interface *ChatClientFrame*. *ChatClientFrame*, which also implements *ChatClientListener*, communicates with the chat client object *ChatClient*. The *ChatClientThread* receives messages from the *ChatServerThread*, which communicates with the chat server object *ChatServer*. The actor *ChatAdministrator* is the only one who interacts with *ChatServer*. The five major steps in the life cycle of these objects is marked by the numbers 1 to 5 in circles:

1. *Construction and Connection*

The actor *Chat Administrator* starts *ChatServer*, which opens the chat log, to be able to store incoming messages. *ChatClientFrame* is started indirectly by the actor *Chat User* through *ChatClientApplet*. After *Chat User* enters *ChatClientFrame*, *ChatClient* is constructed and started. *ChatClientFrame* registers with *ChatClientThread* as a *ChatClientListener* in order to receive incoming messages. *ChatClient* initialization procedures involves the construction of *ChatClientThread* and sending a connect message to *ChatServer*, which accepts the connection and starts *ChatServerThread* handling communication with the client.

## 2. *User Login*

*Chat User* sends his or her login information to *ChatClientFrame*, which asks *ChatClient* to generate a login message that get sent to *ChatServerThread*. The data from the message is extracted and sent to *ChatServer*, which writes it to the log. A new user list is generated and sent to *ChatClientThread* via *ChatServerThread*. *ChatClientThread* propagates the information to the registered listener *ChatClientFrame*, which displays the new user list.

## 3. *Chat Message Exchange*

When *Chat User* writes a sentence in *ChatClientFrame*, *ChatClient* is asked to generate a special message and send it to *ChatClientThread*. The data from the message is extracted, sent to *ChatServer*, and written to the chat log. As a response *ChatServer* issues a broadcast messages about the written sentence to all *ChatServerThread* objects, which send the message to their corresponding *ChatClientThread* objects. This message is propagated to the *ChatClientFrame* objects and displayed in the user interface.

## 4. *User Logout*

The actor *Chat User* requests the log out and *ChatClientFrame* asks *ChatClient* to generate a logout message and send it to *ChatServerThread*, which sends a disconnect request to *ChatServer*. *ChatServer* disconnects the client and ends *ChatServerThread*. The logout information is written to the

log and a similar broadcast as in the message exchange state happens to the remaining *ChatServerThread* objects to inform the clients about the logout of the particular client.

#### 5. *Shutdown and Destruction*

After the logout *Chat User* exits *ChatClientFrame*, which ends *ChatClient*. *ChatClient* ends the client thread *ChatClientThread*, and all objects can be destroyed. On the server side the actor *Chat Administrator* needs to send a shutdown message to *ChatServer*, which ends all *ChatServerThread* objects, closes the chat log, and can be destroyed.

During stage 3 also private messages can be sent, but instead of sending a broadcast to all *ChatServerThread* objects, only the *ChatServerThread* object communicating with the recipient of the message gets the private message sent. The chat client can also at any time request a current user list from the chat server.

The communication from the client to the server always goes from the chat client to the chat server thread, which updates information at the chat server. The communication the other way goes from the chat server, over the chat server thread to the chat client thread, which propagates the message directly to the chat client listener.

## 5.3 BabelChat Instructor Administration

The BabelChat Administration allows the instructor to perform administrative functions while organizing the activities using BabelChat. Managing activities and students is the important part of this system.

### 5.3.1 Use Case Driven Analysis

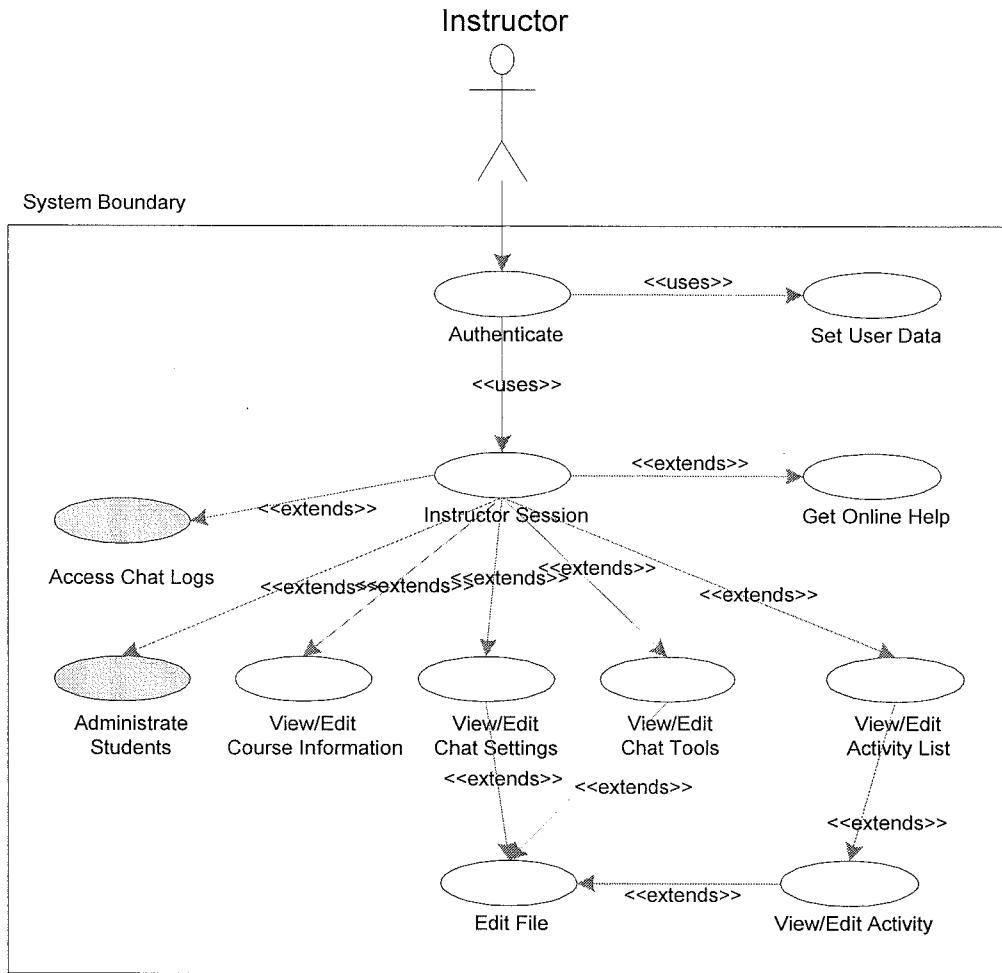
Exploring the use cases from the instructor's point of view in administering the BabelChat system leads again to a main use case *Instructor Session*, which is invoked after the instructor authenticates, and user specific data is stored in the system. Figure 5.10 shows the use case diagram. From this main use case, *Instructor Session*, which represents the user menu structure, all other use cases can be invoked. The use cases that are shaded gray are not yet implemented in the current system.

*Get Online Help* gives the instructor guidelines on how to use the administration system. *View/Edit Course Information* allows the instructor to view, and change course related information. *View/Edit Chat Settings* makes it possible to change BabelChat specific settings like the list of special characters or the online help. In order to change the dictionary or the phrase list, *View/Edit Chat Tools* need to be invoked. The last two use cases invoke the *Edit File* use case in order to change information that is stored in a plain text file. *View/Edit Activity List* shows a list of stored activities and the current one. In order to make changes to activities or just



view detailed information *View/Edit Activity* is invoked. Again the use case *Edit File* is needed when an activity specific text file should be edited.

## BabelChat Administration Use Cases



**Figure 5.10 Refined Use Diagram of BabelChat Instructor Administration**

### 5.3.2 System Architecture

Since the administrative system involves a lot of read/write access to BabelChat properties files, a Java application running in the client side Web browser environment is not an appropriate approach due to Java security restrictions. A

Web application, including a Web interface for the instructor, is the better alternative.

Figure 5.11 shows the overall system architecture of the BabelChat Administration system. Java Servlets were used to implement the system. They have the advantage of being dynamically loaded into the servlet engine of the Web server and allow storing persistent state. Since Java Servlets are normal Java classes, features like inheritance and the whole Java class libraries are available. Client – server interaction is handled on a very high level of abstraction, which can be increased using a servlet class hierarchy. The system architecture shows the BabelChat Administration Servlets and their relation to the BabelChat resources. Properties resource files and the chat logs are accessed for read and write, in order to make the changes to the BabelChat system. The major design approach, by taking HTML code into template files and not residing in the servlet class files, allows changing the layout without changing the code of the servlets.

# BabelChat Administration - System Architecture

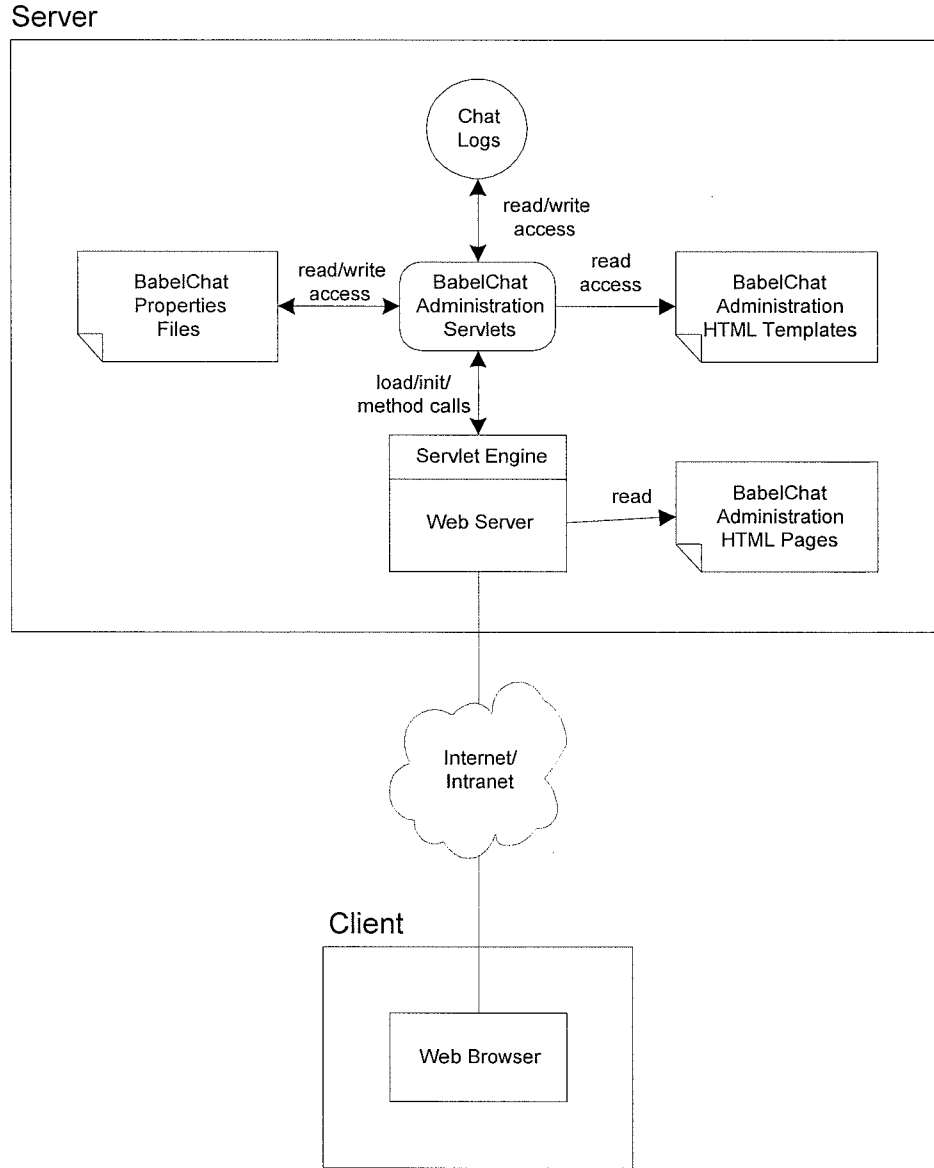


Figure 5.11 BabelChat Administration System Architecture

### 5.3.3 Servlet Class Hierarchy

The servlet class hierarchy shown in

Figure 5.12 emphasizes again the major aspect of abstraction using servlets.

Coming from the *HTTPServlet* defined in the *javax.servlet* package. The class

*ChatServlet* contains important functionality needed by all BabelChat servlets.

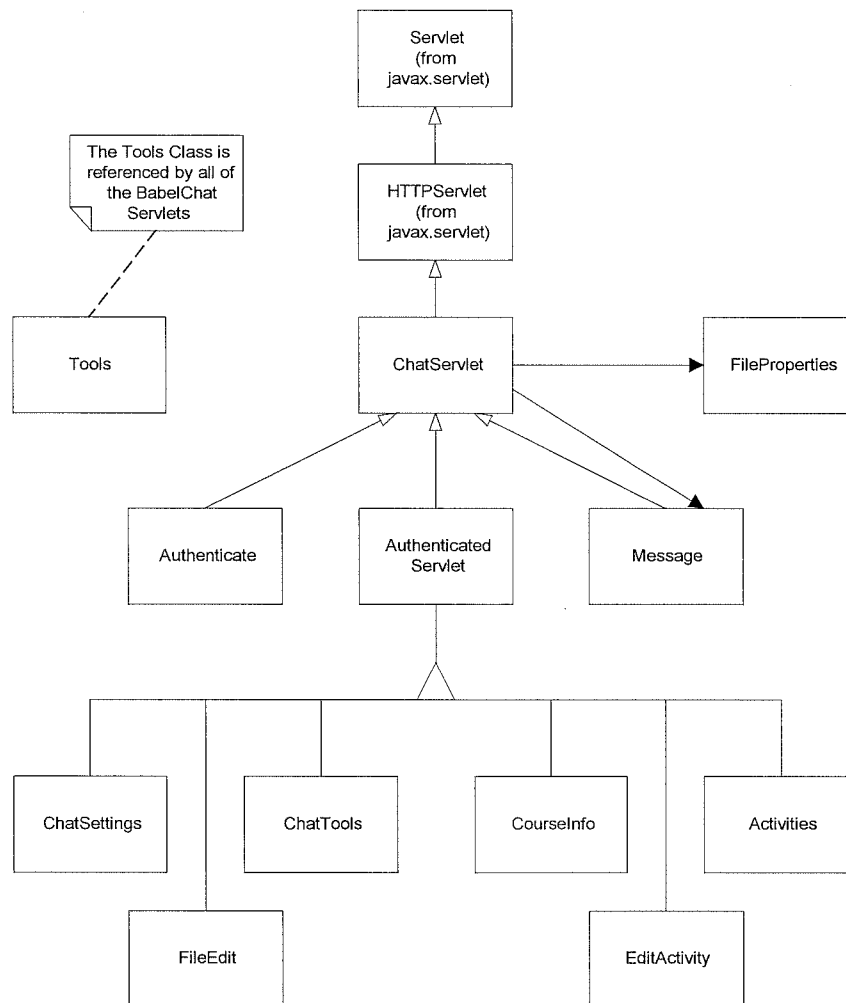


Figure 5.12 BabelChat Servlet Class Diagram

The approach of using HTML templates to dynamically generate the Web form for the client is incorporated in this class. Other functionality like sending general warning or error messages to the client is included too. Servlets that inherit from this class just need to define a template file in their initialization parameters and can easily add dynamic content by using template variables for the locations of the content. The servlet *Message* implements a simple class that has the ability to send a message page to the client using a message template file. The *Authenticate* servlet handles user authentication and redirects automatically to the next user choice. Another important servlet in the hierarchy is *AuthenticatedServlet*. This servlet implements all functionality to guarantee that the current user is authenticated all the time. Servlets inheriting from it can use this functionality implicitly. There is no need for them to perform the same task again. The remaining servlets *ChatSettings*, *ChatTools*, *CourseInfo*, *Activities*, *EditActivity*, and *FileEdit* are equivalent in their functionality to the corresponding use cases explored in 5.3.1. The classes *Tools* and *FileProperties* provide the servlets with utility functionality.

## 5.4 Improvements

The design offers many possibilities for improvements. One issue is the class *ChatClientFrame*. As shown in Figure 5.7 and Appendix A.2 the class is the major user interface component, but also contains a variety of functionality. Breaking this class up into several smaller and more manageable classes to separate the user interface from the other functionality would be an option.

Several components of the user interface could be improved to increase the attractiveness of the interface. The use of HTML components instead of simple text areas would be a great improvement in order to be able to display images or different fonts and colors in the activity description, online help or phrase lists. It would also be possible to represent the writings of different users in different colors or styles.

To be more general about the usage of the chatroom the extraction of a chat framework out of the existing classes would be a challenging but valuable task. It would allow providing all chat functionality, but allow the implementation to use it in a variety of ways, e.g. the use of a chatroom with phrase tools as an activity for learning negotiation rules.

The BabelChat Instructor Administration needs to be improved and extended since the current state is a prototype and only includes the functionality to administer the activities and chat settings. The important features of the student administration and the chat log need to be added since they are essential for the professional use.

## **6 Research about Chatroom Usage**

BabelChat was introduced in chapter 4.2 and its advantages compared to a traditional chatroom were listed. The general advantages of Internet chatrooms were stated in 4.1. BabelChat is argued to be effectively designed for promoting language proficiency. This study was conducted to answer the question if BabelChat used as an interactive, communicative writing activity is more effective in developing writing proficiency than a similar paper-and-pencil activity.

### **6.1 Methodology**

The traditional interactive and communicative activity simulates a chatroom using paper and pencil. Students participating in this group were writing their messages on a sheet of paper, exchanging the paper with their partner, and answering to the message of their partner in written form. Papers can be exchanged between more than just two persons.

The subjects of the study were randomly distributed in two groups, of nearly the same size ( $n = 30$ ). One group, called the chat group, was using the BabelChat program for the activities, the other group, called the paper group, was participating in the paper-and-pencil activity. Due to drop out of students during the study the size of the groups was reduced to 15 in the chat group and 25 in the paper group at the end of the study.

In order to compare the chat group with the paper group quantitatively, the numeric grades of students in both groups were recorded before and after the study. The grades in GER102 serve as a measure of the language skills before the study. The experiment was conducted over the period of one term in spring 1999, and the grades of GER103 served as the measure of the outcome after the study. The writings of the chat group were also collected in order to analyze them and gain knowledge on how the students were using the chatroom. Since the final written test is a major part of the course grade, and also knowledge is transferred from writing to speech, the final grade in the course might serve as a good measure of the developed language skills. The ACTFL guidelines were used to place the students in certain levels for the final written test.

For the analysis the Mann-Whitney U test was used. This gave insights in comparing the performance of the two groups.

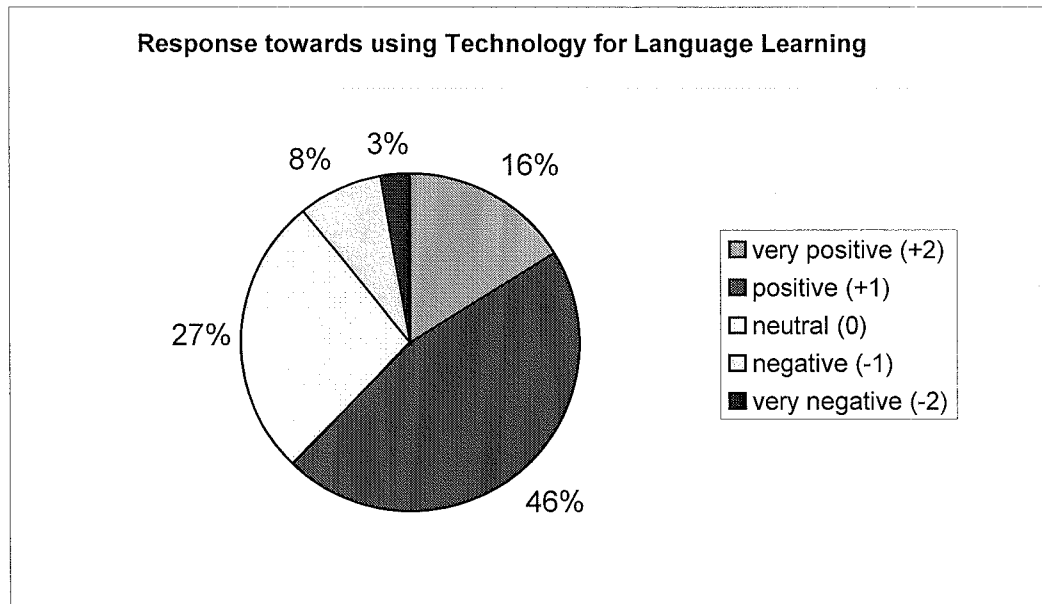
## **6.2 Subjects**

The subjects for this study were the students of the first-year German classes at Portland State University during Spring Term 1999. The two groups of participants were recruited out of the three sections of first-year German. From the 65 students that started in Winter Term 1999 with a training session, only 40 students finished Spring Term 1999. This represents a drop out rate of 38%.



The following paragraphs present the results of the demographic survey done at the beginning of spring term. The demographic survey can be found in Appendix B.

The gender is nearly distributed evenly with 49% female and 51% male and the average age of the subjects is 24.2 years. Only 3 of the 40 subjects belong to ethnic groups other than Caucasian. The average year in college is 2.9. Only 3 subjects used a chatroom before for their language studies, only 2 for other studies and 13 for recreational usage. The number of students who never used a chatroom before was 19. It was therefore important to train students in chatroom usage. 73% of the subjects have a computer at home but only 62% have Internet access from home. This means that a high percentage of students need to use the PSU computer labs, and is therefore restricted in their usage of the chatroom for the activity. In order to plan the technology integration in the classroom the survey asked for the attitude towards using technology in foreign language classes. The answer to the questions can be seen in Figure 6.1. Nearly two third (62%) of the students answered with positive or very positive. The median of the attitude was positive.



**Figure 6.1** Response towards using technology for language learning

### 6.3 Procedures

The activity was introduced to the students using several handouts that explain the organization and learning outcomes of the activity. They can be found in Appendix C. The next step was to conduct the demographic survey and distribute the students randomly among the two groups. After the two groups were formed the groups were introduced separately to the activities and organizational issues. The chat group needed to be trained using the Web and logging in to the chatroom. During the next three months both groups participated in the activities, which was accompanied by paper handouts found in Appendix C. First students participated in the activity as an in-class activity and the last month as homework assignments out of class. At the end of the spring term a final survey was conducted to get feedback

from the students about the chatroom. Unfortunately few students returned the survey, and therefore no significant results can be presented.

## 6.4 Statistical Analysis

### 6.4.1 Grade Changes in Chat and Control Group

The descriptive statistics in Table 6.1 and Table 6.2 show that the average of the grades from GER102 to GER103 increased slightly by 0.06 in the chat group, and decreased slightly by 0.08 in the paper group. This is visualized also in Figure 6.2.

Examining the median of the grades, no changes can be found in either group.

**Table 6.1** Descriptive statistics of changes in chat group

		Statistics	
		102_GRADE	103_GRADE
N	Valid	15	15
	Missing	0	0
Mean		3.07	3.13
Median		3.00	3.00
Mode		3	4
Std. Deviation		.80	.83
Range		2	2
Minimum		2	2
Maximum		4	4

Table 6.2 Descriptive statistics of changes in paper group

		Statistics	
		102_GRADE	103_GRADE
N	Valid	25	25
	Missing	1	1
Mean		3.64	3.56
Median		4.00	4.00
Mode		4	4
Std. Deviation		.57	.51
Range		2	1
Minimum		2	3
Maximum		4	4

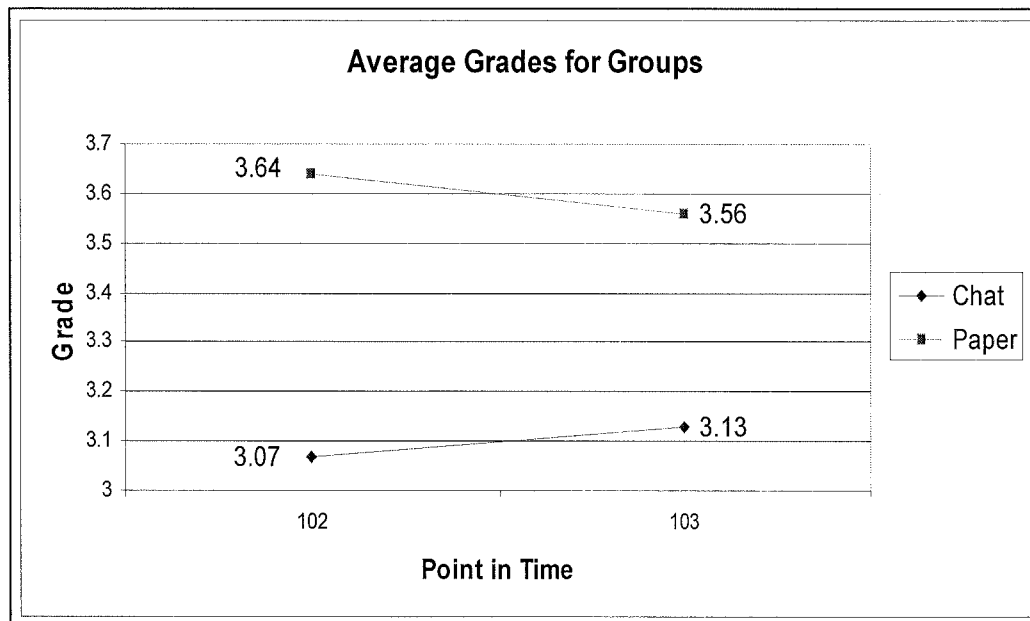


Figure 6.2 Change of average grades in chat and paper group

However, the results of the Mann-Whitney U test (Table 6.3 and Table 6.4) show no significant differences ( $p = 0.61$ ) in the changes of the grades between the chat and the paper group and it can therefore not be concluded that the chatroom activity is more effective than the paper-and-pencil activity.

**Table 6.3 Ranks of chat and paper group**

<b>Ranks</b>		
Group	N	Sum of Ranks
Grade Change Chat	15	297.5
Paper	25	522.5
Total	40	

**Table 6.4 Test statistics between groups**

<b>Test Statistics</b>	
	Grade Change
Mann-Whitney U	197.500
Z	0.279
Asymp. Sig. (2-tailed)	0.610

The data used in the analysis can be found in Appendix D.

## **7 Conclusions**

The study did not show that BabelChat used as writing activity is more effective in developing writing proficiency than a similar paper-and-pencil activity. Due to the small number of subjects and the short period of time the study was conducted, the results need to be taken tentatively and not conclusively and further research is necessary to examine the use of BabelChat in more detail.

BabelChat provides a tool and framework for further research in the use of chatrooms in CALL, including observation of students' language use and progress. The use of BabelChat can save a significant amount of classroom time and allows students to connect in their effort to acquire communicative competence in a more interactive and communicative form than a paper-and-pencil activity would allow. As instantaneous text-based communication becomes even more common such activities will likely grow in importance in foreign-language instruction that aims at the development of real-world proficiency.

### **7.1 Future Research**

In order to achieve a higher variation in the variables and the more significant results it would be important to conduct research with a larger number of subjects and over a longer period of time. It would also be important to use a proficiency test as a measurement instead of the final course grade in order to have a more accurate representation of the students' writing abilities. The reason for students

dropping out of the class should also be examined to know if the use of the chatroom is related to the drop out or not.

As mentioned in 3.2 comparative research about the effectiveness of technology has its difficulty and results need to be considered in the research context and should not be generalized too far. It might be therefore more interesting to ask specific questions about the technology usage, e.g. “How in particular do students use a certain technology?” For the BabelChat activity it would be interesting to examine results about the usage of the offered language features, e.g. “How often do students use the dictionary or phrase list?” A research conducted over a longer period of time would also allow a more representative analysis of the chat transcripts. Finding the optimal number of participants in the chatroom would also be an interesting study.

## **7.2 Improvements**

To increase motivation, improve the context of an activity, and deal with the problem of too many participants in the chatroom there are some interesting suggestions of some researchers. Kurlander, Skelly, & Salesin (1996) propose a Comic Chat as an on-line chat, where the system dynamically renders a comic generated of the participants’ choice of characters and emotions, and also the text of the conversation. With the right artwork this form of chat could enrich the context of an activity and the motivation of the participants, especially younger learners. Two different models for on-line chats are presented by Viegas & Donath

(1999) and Erickson et al. (1999). Their models both include a social component to the chatroom, where participants are represented by circles, and location takes an important part. Depending on the virtual location in the chatroom, participants can only “listen to” and take part in conversation with participants close to each other. It is possible to “move” around and “listen” to other participants. This brings an interesting and motivating aspect to the chat and would also address the problem of too many participants without creating different chatrooms. Both systems also include a graphical representation of the conversation threads, to easily identify active and more passive participants, which would be ideal for an educational environment.

Offering a self-assessment checklist for the students to make them responsible for their learning outcomes could solve the problem of students leaving the context of the activity during their conversations and getting into “silly” talk. This checklist could be stored and compared by the teacher with the actual outcome of the individual student.

An automated intelligent chat agent analyzing the activity could monitor the conversation and interact with students motivating them to write when making too long breaks, or encouraging them to write longer sentences. This would be an interesting feature if no instructor were present.



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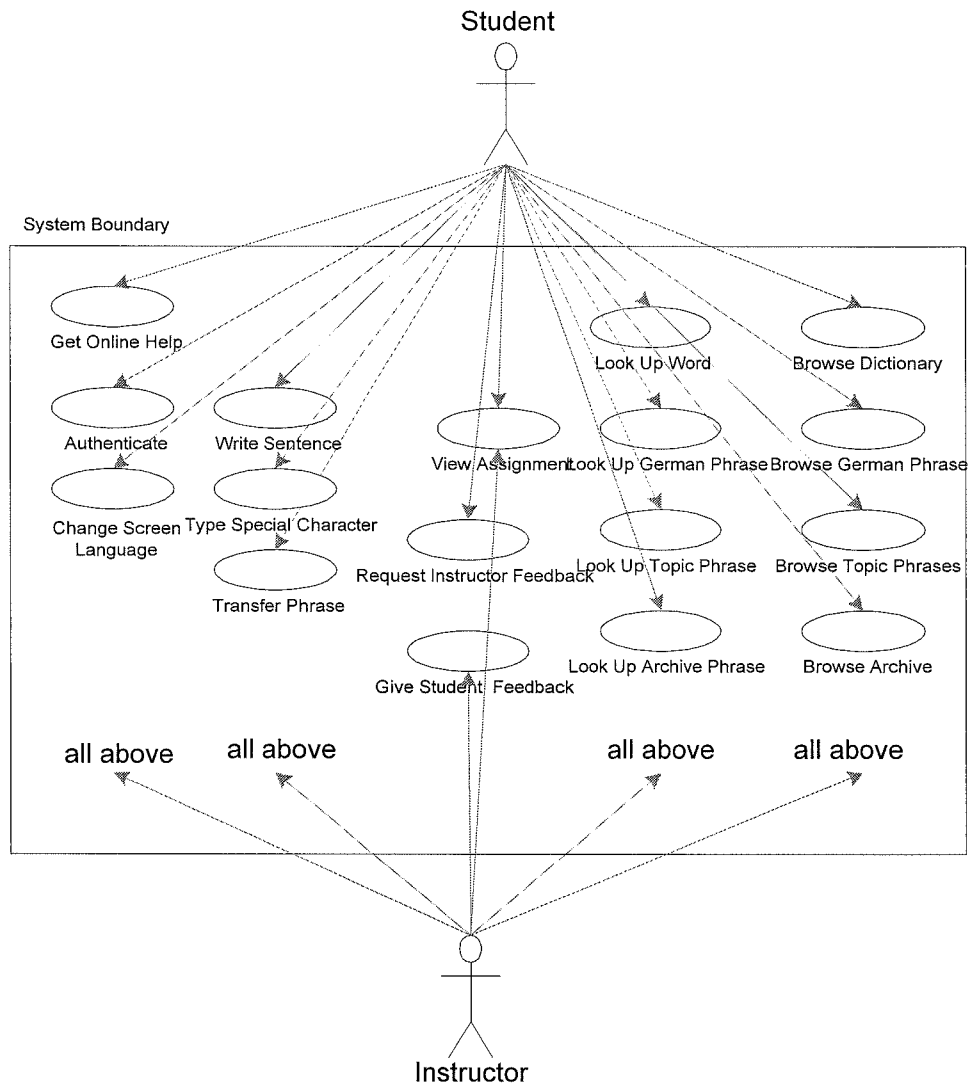
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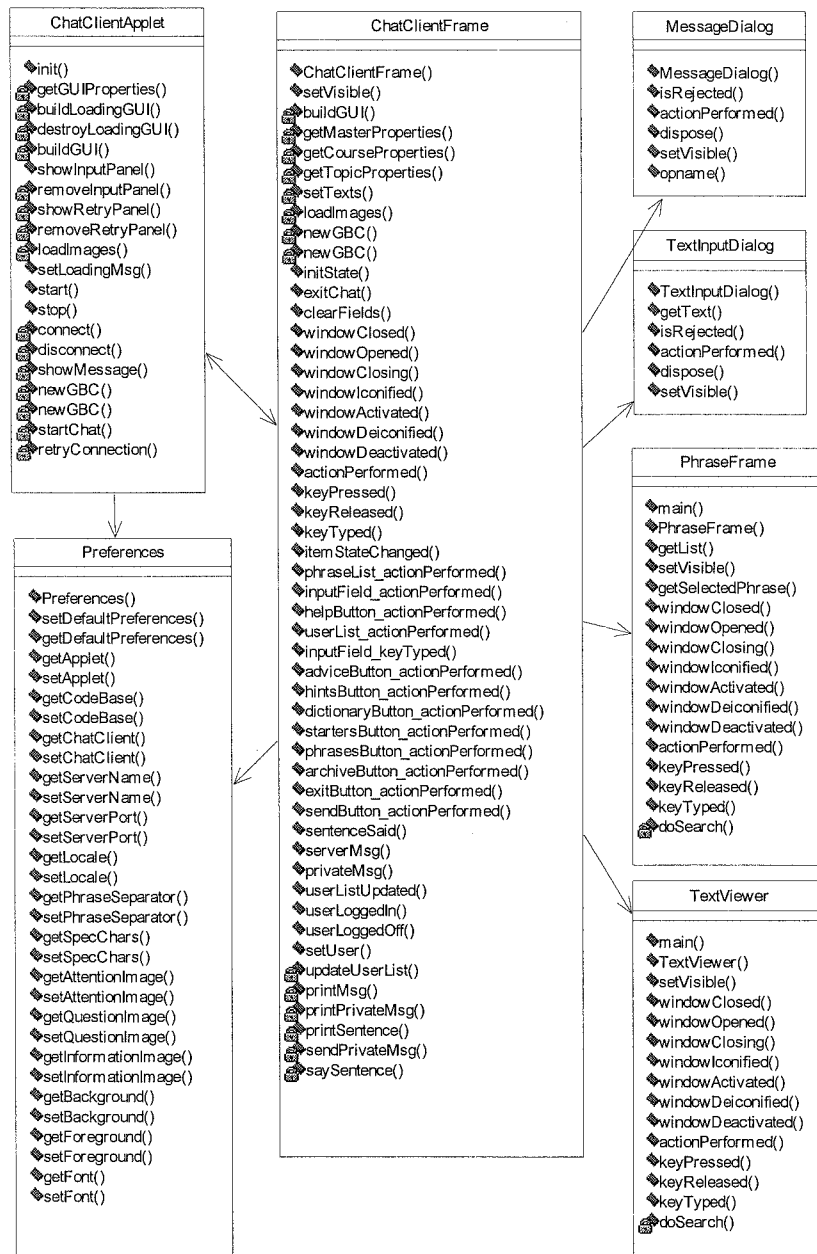
# Appendix A UML Diagrams

## A.1 Simple BabelChat Use Case Diagram

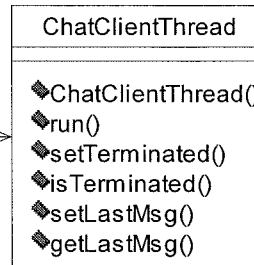
### Simple BabelChat Use Cases



## A.2 BabelChat Detailed Class Diagrams









## Appendix B Classroom Surveys

### Chatroom in First-Year German Class

Next quarter we are introducing an Internet “chatroom” into first-year German and will be conducting research about its effectiveness in language learning. The first stage is this survey of potential users. Thank you for your cooperation.

*Nächstes Quartal werden wir einen sog. Internet Chatroom in den Deutschunterricht einführen und werden eine Forschungsarbeit über dessen Wirksamkeit im Sprachunterricht durchführen. Die erste Stufe ist diese Umfrage potentieller Benutzer. Vielen Dank für Ihre Mitarbeit.*

1. Do you know what an online “chatroom” is?  Yes  No  
*Wissen Sie was ein Online-Chatroom-Programm ist? Ja Nein*
2. If yes, have you ever used one?  Yes  No  
*Wenn ja, haben Sie schon einmal eines benutzt? Ja Nein*

If your answer to item 2 is *No*, please go on with question 6.  
*Wenn Ihre Antwort zu Punkt 2 Nein ist, fahren Sie bitte mit Frage 6 fort.*

---

3. Which term best describes your experience with chatrooms?  
*Welche Aussage beschreibt am Besten Ihre Erfahrung mit einem Chatroom-Programm?*
- have tried once or twice  use occasionally (up to once a week)  regular user  
*ein- bis zweimal benutzt benutze es gelegentlich (bis zu einmal die Woche) regelmäßiger Benutzer*

4. Have you ever used a chatroom to socialize in a foreign language?  
*Haben Sie schon einmal einen Chatroom in einer Fremdsprache benutzt?*
- Yes, in which language(s): \_\_\_\_\_  No  
*Ja, in welchen Sprachen: Nein*

5. Have you ever used a chatroom in one of your courses before?  
*Haben Sie jemals einen Chatroom in einem Ihrer Kurse benutzt?*
- Yes, please specify course: \_\_\_\_\_  No  
*Ja, bitte geben Sie den Kurs an: Nein*
- 

6. What feelings do you have about using a chatroom in your German class? Why?  
Please answer more specifically than “good” or “bad”.  
*Welches Gefühl hätten Sie, wenn Sie einen Chatroom in Ihrem Deutschunterricht benutzen müßten? Warum?*  
*Bitte antworten Sie spezifischer als “gutes” oder “schlechtes”.*
-

7. What do think the benefits of using a chatroom in your German class could be?  
*Was denken Sie wären die Vorteile, wenn Sie einen Chatroom in ihrem Deutschunterricht benutzen würden?*

---

8. What concerns would you have about using a chatroom in your German class?  
*Welche Bedenken hätten Sie gegenüber der Benutzung eines Chatrooms in ihrem Deutschunterricht?*

---

9. How often per week would you be able to use the chatroom outside class?  
*Wie oft, pro Woche, wären Sie in der Lage den Chatroom außerhalb des Unterrichts zu benutzen?*

once                       twice                       more often: \_\_\_\_\_  
*einmal                      zweimal                      öfters*

10. How much time would you be able to spend per chat session outside class?  
*Wie viel Zeit könnten Sie pro Chatroom-Sitzung außerhalb des Unterrichts aufbringen?*

15 minutes                       30 minutes                       1 hour                       other: \_\_\_\_\_  
*15 Minuten                      30 Minuten                      eine Stunde                      keine der Vorhergenden*

11. Do you have regular Internet access at home or somewhere else other than PSU?  
*Haben Sie regelmäßigen Internet-Zugang von zu Hause oder von irgendwo anders als PSU?*

Yes, please specify where: \_\_\_\_\_                       No  
*Ja, bitte geben Sie an von wo:                      Nein*

11. Which is your preferred place from which you would use the chatroom?  
*Von welchem Ort aus würden Sie den Chatroom am Liebsten benutzen?*

from home (if possible)                       from a PSU computer lab  
*von zu Hause (falls möglich)                      von einem PSU Computerraum*

12. We are also considering using 20 minutes of class time per week for chatroom activities. What is your opinion about it?

*Wir überlegen auch 20 Minuten der Unterrichtszeit für Chatroomaktivitäten aufzubringen. Was ist Ihre Meinung dazu?*

---

13. After answering these questions, what is your present attitude towards using a chatroom in your German class?

*Welche Einstellung haben Sie, nachdem Sie diese Fragen beantwortet haben, zur Benutzung eines Chatrooms in Ihrem Deutschunterricht?*

very positive                       positive                       neutral                       negative                       very negative  
*sehr positiv                      positiv                      neutral                      negativ                      sehr negativ*

Thank you very much for your help and participation!  
*Herzlichen Dank für Ihre Hilfe und Mitarbeit!*

## Demographic Survey of First-Year German Class

All information of the survey will be kept confidential and will only be used in the context of the chatroom research project. Matthias Lampe will not know your name.

*Alle Informationen der Umfrage werden vertraulich behandelt und werden nur im Umfeld des Chatroom - Forschungsprojektes benutzt. Ihr Name wird Matthias Lampe nicht bekannt sein.*

### Basic personal information:

SSN: \_\_\_\_\_  
*Sozialversicherungsnummer*

Age: \_\_\_\_\_  
*Alter*

Gender:  male  female  
*Geschlecht männlich weiblich*

Ethnic identity:  White  Hispanic  African-American  
*Ethnische Herkunft*  Native-American  other: \_\_\_\_\_

### Educational background:

Are you the first generation of your family in college?  Yes  No  
*Sind Sie die erste Generation in Ihrer Familie auf einer Univeisität? Ja Nein*

Which year of college are you? \_\_\_\_\_  
*In welchem Universitätsjahr sind Sie?*

Describe your previous language learning (middle school, high school, other post-secondary also, other than classroom):  
*Beschreiben Sie Ihre vorhergehenden Sprachstudien.*

---

Does anyone at home commonly use another language?  
*Spricht jemand bei Ihnen zu Hause normalerweise eine Fremdsprache?*  
 Yes, which language(s): \_\_\_\_\_  No  
*Ja, welche Sprache(n) Nein*

### Technology and language study:

Have you used computers in your language study?  Yes  No  
*Haben Sie Computer in Ihren Sprachstudien verwendet? Ja Nein*

Have you used computers in other subject areas?  
*Haben Sie Computer in anderen Studienrichtungen verwendet?*  
 Yes, please specify: \_\_\_\_\_  No  
*Ja, bitte machen Sie genauere Angaben. Nein*

OVER/Bitte Wenden

Do you regularly use the "Wie bitte?" CD-ROM?  Yes  No  
*Benutzen Sie regelmäßig die „Wie bitte?“ CD-ROM?* *Ja* *Nein*

Have you used any other language-learning software?  
*Haben Sie irgend eine andere Sprachlern-Software benutzt?*  
 Yes, please specify: \_\_\_\_\_  No  
*Ja, bitte machen Sie genauere Angaben.* *Nein*

Have you used a chatroom ...  
*Haben Sie einen Chatroom benutzt für...*  
In your language study?  Yes, please specify: \_\_\_\_\_  No  
*ihre Sprachstudien?* *Ja, bitte machen Sie genauere Angaben.* *Nein*

In other studies?  Yes, please specify: \_\_\_\_\_  No  
*andere Studienrichtungen?* *Ja, bitte machen Sie genauere Angaben.* *Nein*

For recreational purposes?  Yes, please specify: \_\_\_\_\_  No  
*außerstudentische Aktivitäten?* *Ja, bitte machen Sie genauere Angaben.* *Nein*

What is your general response towards using technology for language learning?  
*Wie ist Ihre generelle Antwort auf die Benutzung von Technologie im Sprachunterricht?*  
 very positive  positive  neutral  negative  very negative  
*sehr positiv* *positiv* *neutral* *negativ* *sehr negativ*

Technological profile:

Do you have access to a computer at home?  Yes  No  
*Haben Sie Zugang zu einem Computer zu Hause?* *Ja* *Nein*

If yes, please provide the following information about the computer so that we can adjust our software and plan to support you better:  
*Wenn ja, bitte stellen Sie die folgenden Informationen über den Computer zur Verfügung, damit wir unsere Software anpassen können und Sie besser unterstützen können.*

Computer type : \_\_\_\_\_ (e.g. Pentium PC, 486 PC, Power MAC)

CD-ROM:  Yes  No

Internet Access:  Yes, please specify modem speed:  
 9600  14400  28800  33600  faster: \_\_\_\_\_  
 No

Browser/Version: \_\_\_\_\_ (e.g. Netscape Navigator 4.05, IE 4.0)

Thank you very much for your help and participation!  
*Herzlichen Dank für Ihre Hilfe und Mitarbeit!*

## Final Survey of First-Year German Class

All information of the survey will be kept confidential and will only be used in the context of the chatroom research project.

*Alle Informationen der Umfrage werden vertraulich behandelt und werden nur im Umfeld des Chatroom - Forschungsprojektes benutzt.*

SSN: \_\_\_\_\_  
Sozialversicherungsnummer

Kind of participation in the project:                       Internet Chatroom                       Paper Activity  
*Art der Teilnahme an dem Projekt?                      Internet Chatroom                      Papier Aktivität*

---

### Paper and Chatroom Participants:

Please rate your degree of participation in the activity:

*Bitte stufen Sie den Grad Ihrer Teilnahme an der Aktivität ein:*

frequent                       regular                       occasional                       rare                       not at all  
*oft                      regelmäßig                      manchmal                      selten                      überhaupt nicht*

If you found it difficult to do the activities, please briefly tell why:

*Falls Sie Schwierigkeiten hatten die Aktivität durchzuführen, sagen Sie bitte warum:*

---

In your view, how much did the activity help you progress in German?

*Aus Ihrer Sicht, wie sehr hat die Aktivität bei Ihren Deutschfortschritten geholfen?*

---

Please rank this activity against the value of other activities:

*Bitte stufen Sie die Aktivität gegenüber dem Wert anderer Aktivitäten ein:*

---

In your view, what are the best and worst features of the activity:

*Aus Ihrer Sicht, was sind die besten und schlechtesten Eigenschaften der Aktivität:*

---

OVER/Bitte Wenden

What is your general response towards using technology for language learning?

*Wie ist Ihre generelle Antwort auf die Benutzung von Technologie im Sprachunterricht?*

very positive  
*sehr positiv*

positive  
*positiv*

neutral  
*neutral*

negative  
*negativ*

very negative  
*sehr negativ*

---

Chatroom Participants:

Please rank this activity against the value of other activities:

*Bitte stufen Sie die Aktivität gegenüber dem Wert anderer Aktivitäten ein:*

---

How can we improve the Chatroom for everyone?

*Wie können wir den Chatroom für alle verbessern?*

---

How could we have served **you** better?

*Wie hätten wir Ihnen besser dienen können?*

---

Please evaluate the amount of use and value of ...

*Bitte bewerten Sie die Benutzung des ...*

Chat staff on line: \_\_\_\_\_

*Online Chatroom Personal*

Detailed task description: \_\_\_\_\_

*Ausführliche Arbeitsbeschreibung*

German Expressions: \_\_\_\_\_

*Nützliche Sätze*

Topic Phrases: \_\_\_\_\_

*Sätze zum Thema*

Chat Archive: \_\_\_\_\_

*Chat Archive*

---

If you want to get notified about further chatroom activities, please tell us your email address:

*Falls Sie über weitere Chatroom - Aktivitäten informiert werden möchten, sagen Sie uns bitte Ihre Email Adresse: \_\_\_\_\_*

Thank you very much for your help and participation in the project!

*Herzlichen Dank für Ihre Hilfe und Mitarbeit an dem Projekt!*



## Appendix C Classroom Material

### Development of Writing Skills: Principles and Resources

To develop their writing skills, **learners need** an appropriate task, access to language elements (both familiar and new), some genuine motivation to write, and prompt, meaningful responses to their writing (whether from other writers, from a teacher, from instructional materials, or through a process of self-evaluation and revision). **Research and experience** show that mechanical “grammar” exercises and direct, strict correction of surface errors are not sufficient and may not even be beneficial. Writing skills are developed by **writing more**, by having a definite **purpose** for writing, and by **responses that encourage communication**.

During first-year language courses, learners spend most of their effort reaching and then expanding performance at the **Intermediate level**, as defined by the American Council on the Teaching of Foreign Languages (ACTFL). The key linguistic feature of the Intermediate is the ability to formulate, in close to real time, **solid sentences about the speaker’s/writer’s immediate world**, and to do so with an accuracy sufficient for the sentences to be understood by a friendly native speaker somewhat accustomed to dealing with foreigners trying to use the language. An example would be a note requesting to borrow some essential item, for example eating utensils for use in a dorm room, or to use some essential facility, such as a spare bedroom.

Part of the next level of proficiency, the **Advanced**, is the ability to produce, readily and with increased accuracy, **clusters of several sentences** in the same context, and to be able to do that in a range of contexts wider than immediate personal needs. An example would be a longer note thanking for the loan of the utensils or the use of the spare bedroom, and telling in some detail how helpful they had been.

Intermediate writing occurs sentence by sentence, but writing a sentence and then just writing another about a different thought or for a different context is not sufficient. It is necessary to create some connection between sentences. Therefore, in the first-year course the writing activities, both tests and projects, have **always encouraged multi-sentence communication**, though sometimes at the expense of letting learners explore the language **without stern checks for accuracy**.

This quarter we are expanding existing writing activities and introducing **new kinds**. Individualized **projects** will continue and will increase in scope and standards for accuracy in communicative function. Writing **tests** will always emphasize communicative tasks.

Another and quite important feature is a **new type of writing activity**. In first quarter, where vocabulary and structures were quite limited and errors in them

could easily produce a severe breakdown of communication and motivation, student-to-student writing and response would have been difficult to maintain. Now that many learners are approaching the Intermediate level, they can maintain and improve their proficiency by engaging in **longer direct communication in writing**.

Therefore, we are introducing regular student-to-student communication at the level of single sentences or short groups of sentences, where possible in real time. In either of two media, electronic or conventional (paper), and in either of two environments, classroom or self-scheduled study, **all students will regularly be engaged in interactive writing at the sentence/ multi-sentence level**.

One possibility will be timed generation, on **paper**, of sets of sentences or questions to be exchanged with another learner for appropriate response through similar sentences or questions. The other option will be participation in a dedicated **internet “chatroom”** available for use in the labs on students’ own computers. During the next week both options will be explained and practiced in class. After that, most of the writing activity will occur outside class. It will be a regular **assignment**, and will be **graded**. Staff will also provide **coaching** during and after the activities.

The chatroom is the subject of a PSU master’s thesis in computer science. Recently it was awarded a grant for further development. The researcher wants to find out whether this technological resource can improve the language-learning process. The goal of the writing activity itself is to **improve students’ writing skills, whether or not that involves technology**. The researcher and the course director presently think it plausible that structured chatroom activity can provide resources that would not otherwise be available. Among them are more convenient communication opportunities for each student, more student-to-student engagement in language use, rapid feedback from other learners and the staff, and on-line helps such as a dictionary, basic spell-checker, and a bank of useful expressions and “starter” items.

You will be asked to participate in the thesis research, whether as a chatroom participant or a member of a “control group.” If you do participate, your personal **privacy and confidentiality** will be maintained, in accord with university and government standards. But participation in the research itself is **neither required nor graded**.

## Kontexte 17-19 Writing Activity

### Lieblingslokale in Portland

#### Was machen wir gerne in Portland, besonders wenn wir mit Familie oder Freunden ausgehen?

Summary: You will be communicating with friends about what you like to do when you go out, especially in a group. Your aim is to exchange information to the point where the group's preferences have been declared and described, the places people go for pleasure are clearly pictured, and the members of the group can judge capably where to go for entertainment. You could then help German-speaking visitors find worthwhile and enjoyable things to do here.

#### Advice about writing:

- Give your communication a “plot” or functional purpose, and let that help you organize and balance your writing. Find out who likes to go where, describe the places, and determine who might want to try going to some of those places.
- Aim for a sentence length of 8-12 words, both to improve your skills and so that your partner will have material to respond to.
- Use verbs (action words) in addition to “to be” and “to have.”
- If you are anxious about some grammar point, ask yourself whether it is perhaps a matter of detail that does not really affect basic communication. If it is that minor, skip it. There will be opportunity for checking such points later.

#### Checklist of activities accomplished:

- \_\_\_\_\_ I named and described my favorite places.
- \_\_\_\_\_ I asked others for their views — more than brief questions.
- \_\_\_\_\_ We discussed going somewhere together.
- \_\_\_\_\_ We actually formulated a workable plan.
- \_\_\_\_\_ I wrote about 150 words, in 12-20 sentences / questions.
- \_\_\_\_\_ I used 10 or more different verbs.
- \_\_\_\_\_ I used German names for basic buildings and other landmarks.
- \_\_\_\_\_ I tried to express possibilities and explore alternatives.
- \_\_\_\_\_ I tried to write about the past.

## Directions for K17-19 “Lieblingslokale in Portland”

(Before you write, you may wish to consult the vocabulary aids on the accompanying page.)

Chatroom participants	Paper participants
<p>1) Begin by discussing the places people in your group enjoy going to in the Portland area. Make sure everyone gets to express likes (and maybe dislikes).</p> <p>2) <i>Describe</i> the places so that others can decide whether they would enjoy them. Deal with convenience, price, restrictions, special attractions, schedules. Compare places and activities that may be similar. Consider what people of different kinds would like, and why. Give reasons for what you state — don’t just “flame.”</p> <p>3) After 10 minutes or so, see whether the group can plan to go to one of the places together — deal with transportation, saving time getting there, how to prepare, what to take along, how people will get home.</p> <p>4) At the end of the session, or for next class, fill out the activity checklist on the first page.</p>	<p>(When you write something, leave room on your paper for your partner to write something of similar length in return.)</p> <p>1) Make up a list of around 10 statements that tell about the places (das Lokal, die Lokale) you like to go to in Portland. How do you get there? Who goes along? What do the places look like? What do you do there? What do other people do there? What are especially interesting things and activities there?</p> <p>2) Make up a list of around 10 questions you would ask someone else who is carrying out task 1 above. Some questions will be “opener” questions, such as “Where do you go on Saturdays?” Others may be “follow ups,” for example “What is the best time to go to [the place your partner has mentioned]?”</p> <p>3) After 10 minutes or so, exchange papers with a partner. In ways that will further the joint communication task, reply to the partner’s questions about you, and respond to the partner’s own statements.</p> <p>4) At the end of the session, turn in your messages. Then, or for next class, fill out the activity checklist on the first page.</p>

## Writing Activity for K20-23 Classroom/Chatroom

### **Aber wie machen wir das? und warum so? But just how are we going to do that? and Why that way?**

In Kontexte 20-23 of *Wie, bitte?* people choose pleasure activities and make more detailed arrangements to do them. They need to do such things as decide which clothes to wear for a cruise on the Rhine or to buy gifts for family and friends. It's more than just choosing and saying the basic activity. People have to discuss and decide which parts of an activity are most worth doing, and what steps are required to accomplish. Part of doing such things well is also the ability to compare one activity to another, including experiences in the past.

In this writing activity you will explore areas of interest that involve activities that can be shared by a group of people. It's not the destination that is important, but rather what you must do and have to reach the goal.

In your interchanges with your partner(s), try to:

- 1) keep asking the questions "Wie?" and "Warum?" rather than so much "was/wann/wo?"
- 2) push for specifics—the things you'll need to have to do the activity, the smaller steps that it is divided into, the unexpected things that could come up and need to be dealt with (or taken advantage of).

Here are some specific vocabulary targets:

clothes and other personal possessions;  
equipment involved in hobby activities;  
the verbs that describe activities like river cruises and buying gifts

Picture-dictionary resources will be made available, and the chatroom has an on-line dictionary.

You might start your activity in these several ways:

- 1) Find out whether someone else shares an activity interest with you ("Ich spiele gern Tischtennis. Und du?")
- 2) Explore what people are doing on the weekend or in a coming vacation. (jemand=anyone)
- 3) Ask how to arrange such or such an activity, or what you need to obtain to do it.

## First-Year German – Upcoming Writing Activities (5/99)

We are moving to the **next stage** in the interactive writing activities and the chatroom research project. Although there have been rough spots, as there always are when new things are tried, response to the writing activities has been quite positive. More important, it appears to be contributing to improvement in writing.

The **procedures** for conducting the interactive writing and the chatroom version have been established and revised, and the participants in each group know how to use the resources. The pedagogical justification—the explanation of what the activities contribute to language learning—has also been presented. It is time now to move most of the interactive writing out **of the classroom** and return that time to activities that have more need of classroom time, such as face-to-face speaking. Starting next week (10-14 May), interactive writing will become a regular weekly assignment to be conducted outside class and monitored by staff. Performance will count in that part of **the course grade**, which is made up of writing assignments and tests. The effort you put into these writing activities will also help you on **the final examination**, which will include similar items.

The **conventional (paper) participants** will pair off with each other, and the success of what they do will depend on mutual support. The interactive part of their communication may occur in any of several ways: face-to-face meeting to exchange questions and sentences; exchange of finished question lists for reply at a later time; or either of the two procedures just described can be carried out by e-mail.

The **chatroom participants** select times for chatroom use which are convenient to their schedules and, if they are participating on campus, to PSU lab availability. They will also identify one or more partners who are on similar schedules. The chatroom will be staffed by one or more instructors or by Matthias Lampe for 5 hours per week. The chatroom will also be open 24 hours a day, 7 days a week, though often unstaffed. You and your partners may use the chatroom for your assignment anytime, and are free to use it beyond the requirements of the assignment.

The weekly activity for both groups is planned to take an **hour** of on-task time.

**Chatroom participants:** Matthias will distribute information about browsers and the chatroom itself. If you are using your own computer, it is essential that you **know how to handle the browser**, including plugins and preference, and be able to install the most recent version.

## First-Year German – Preparing for Independent Writing Activity (5/99)

Here are the set-up procedures to be followed by the two groups:

### CONVENTIONAL (PAPER-BASED)

- Find at least one partner with whom you feel comfortable exchanging messages. Sign-up sheets will be provided shortly, or you can give/send your instructor a note. Record your partner's contact information (name, phone, e-mail, possibly address)
- Decide and indicate on the sign-up how you will interact with your partner in writing. Here are possibilities:
  - get together somewhere for "real-time" exchange of messages sentence by sentence or in other short "chunks," as we have done in class;
  - write your entire collection of questions, exchange it with your partner, and reply to your partner's question;
  - use e-mail to do either of the above.
- When topics and language resources are handed out, make sure you and your partner know how and when you are going to exchange your writing.
- Carry out your writing activity and turn in your writing within a **week**. Please identify both of the participants right on the pages. **Above all, don't let your partners down!**

### CHATROOM

- We will consult with you about the most favorable times for chatroom use, and will announce a schedule of about 5 hours a week where the chatroom will be open and staffed; likely times are:
  - Monday 8-9 pm
  - Wednesday 4-6 pm
  - Thursday 8-9 pm
  - Friday 3-4 pm
- Find at least one partner with whom you feel comfortable exchanging messages, and who has a similar schedule. Sign-up sheets will be provided shortly, or you can give/send your instructor a note. Record your partner's contact information (name, phone, e-mail, possibly address). You don't have to chat with any of these partners, but you may want to arrange with one of them to favor a given time-slot so that you can be sure that you do have someone to chat with.
- Within a **week** of when topics and language resources are handed out, carry out your chat activity. Your activity will be recorded automatically. You need not turn anything in. **Above all, don't let your partners down!**

## Writing Activity (c) for K20-3 Classroom/Chatroom

### Das war super! / That was awesome! (transition to independent chatting/writing)

We expect this activity to be the last major chatting/writing session that will be conducted in class. From now on, these assignments will be distributed in class but will be carried out away from the classroom. Consult the other recent handout for the way you should arrange your cooperative chatting/writing. A new handout has the first independent assignment and the outline for later assignments.

Today's session is intended to make sure that everyone is ready for the move to independent writing/chatting. The content is a continuation of the "Das war super!" theme of the previous activity. In class we have been expanding the range of places we go to for entertainment and cultural events; important recent structures include past tense and object pronouns (him, her, me, etc.). **Theme for today: discuss with your partner(s) the experience you had at some place of entertainment or even cultural advancement, but try to get beyond superficially reporting where you were and what took place.**

This will not only help you improve your German; it will also make what you write more interesting. Can you present the positive and negative parts of the experience, more than just with "good" and "bad"? Can you extend your focus from concrete things and immediate events to include background, consequences, and implications? Can you link up two or more "chunks" of content, such as a description of something and an event associated with it? (Example: "There was a good band, and I asked them to play")

We notice from the handwritten and, especially, chatroom records that people tend to stick with simple expressions and limited vocabulary, used over and over. You might try limiting your use of forms of "to be," and even forbidding yourself to use the words "gut" and "schlecht."

For our information, please indicate your activity with the following:

chatroom      OR       conventional writing

YES	NO	I consciously tried to increase sentence length.
YES	NO	I used verbs that I haven't customarily used before.
YES	NO	I tried to describe causes and effects.



## Writing Activity for K22-6 (a) Classroom/Chatroom

### Im Sommer / In the summer

Discuss your plans and hopes for the coming summer, and find out about those of your partner(s). Here are some approaches:

- Outline the various time-periods into which your summer will be divided, and where you will be during them.
- Communicate things you want to do in one “chunk” of communication, sort of a list of goals.
- Do the same for your obligations.
- Focus on a highpoint of the summer and work it for all it’s worth. Ask and answering the customary questions (Wer? Was? Wann? Wo? Wie? Warum?), and then going back to those same questions for more detail.
- You could even work on past tense by discussing how far along the plans are. (Example: Have you already bought your plane tickets?)

For our information, please indicate your activity with the following:

\_\_\_ chatroom      OR      \_\_\_ conventional writing

YES	NO	I consciously tried to increase sentence length.
YES	NO	I used verbs that I haven’t customarily used before.
YES	NO	I tried to describe causes and effects.

## Writing Activity for K22-6 (b) Classroom/Chatroom

### Schon dagewesen, schon gemacht, habe das T-Shirt sogar / Been there, done that, got the T-Shirt

Recollect last summer (or other previous summers), relate it to this summer, and compare your thoughts to those of your partner. Here are some approaches:

- Outline on a mental calendar the various time-periods of the several summers, and then call up the associated memories—visual, aural, maybe even tactile, gustatory and olfactory. (Just how did the BBQ taste, and what made it that way?)
- Focus on a highpoint of the summer and work it for all it's worth. Ask and answer the customary questions (**Wer? Was? Wann? Wo? Wie? Warum?**), and then going back to those same questions for more detail.
- Balance plans against subsequent realities—what you aimed to do, and how much you actually accomplished.
- Specify time more precisely, using words and structures such as **schon/noch nicht, vor \_\_ Jahren** (X years ago).

The next page tells more about the past tense, especially a basic structure for describing motion with **gehen, fahren, reisen**, etc.. Below on this page are some useful words and expressions:

Please indicate your activity in the following areas:

- |     |    |   |
|-----|----|---|
| YES | NO | I consciously tried to increase sentence length.          |
| YES | NO | I systematically distinguished past and present.          |
| YES | NO | I tried to use <b>gehen, fahren</b> , etc. in past tense. |

## Some Reminders about the Basic Past Tense

- Use forms of **haben** (not **hatt-**) with **gemacht**, **gekauft**, etc.
- Adjust the form of **haben** to fit the subject:

Ich <b>habe</b>	wir <b>haben</b>	
du <b>hast</b> / Sie <b>haben</b>	Sie <b>haben</b>	gemacht, gekauft, etc.
er/sie <b>hat</b>	sie (they) <b>haben</b>	

• Word order reminder: Place **gemacht**, **gekauft**, etc. at the END of the idea they express. Other information goes at the START or in the MIDDLE of the sentence, NOT at the END.

Wir **haben** voriges Jahr eine Reise nach Kalifornien **gemacht**.  
Voriges Jahr **haben** wir eine Reise nach Kalifornien **gemacht**.

## Expressing motion with **gehen**, **fahren**, **reisen**, etc.

Here are the past tense forms of some common verbs that express motion:

gehen > gegangen	fahren > gefahren	kommen > gekommen
fliegen > geflogen	steigen > gestiegen	reisen > gereist

The past tense of these verbs, and others which express motion (and locomotion), is constructed with forms of the verb **sein** (to be), instead of **haben** (to have). English used to behave the same way (“Christ IS risen,” not “HAS risen”), and English still allows forms of “to be” to express conditions which result from the completion of an action in the past. Example: “Jessica IS gone.” (She *is* gone, because she *went*.)

Whatever the reason and the difference between the two languages, the use of **sein** instead of **haben** must be learned, and the best way to learn it is to practice it in sentences that have a clear meaning to you.

Here is a table with forms of **sein** linked to motion verbs in past tense:

Ich <b>bin</b>	wir <b>sind</b>	gegangen, gefahren,
du <b>bist</b> / Sie <b>sind</b>	Sie <b>sind</b>	geflogen, gekommen,
er/sie <b>ist</b>	sie (they) <b>sind</b>	gestiegen, gereist

See the “Word order reminder” above for advice about sentence structure. The same principle holds for the motion verbs.

## Appendix D Data

### Grades of chat group

102 Grade	103 Grade	dGrade
4	3.67	-0.33
3.33	3.33	0
3.67	4	0.33
2	2	0
2.67	2	-0.67
2	2	0
3.33	3	-0.33
4	3.67	-0.33
3	3.33	0.33
3.33	3.67	0.34
2	2	0
2.33	3.33	1
3	3	0
4	4	0
4	4	0

## Grades of Paper Group

102 Grade	103 Grade	dGrade
2.67	2.67	0
3.67	3.67	0
4	4	0
4	4	0
2.67	2.67	0
3	3.33	0.33
3	3	0
3.67	3.67	0
4	4	0
2.33	2.67	0.34
3.67	4	0.33
4	4	0
3.33	3	-0.33
4	4	0
3.67	3.67	0
3	3	0
4	4	0
3.67	3.67	0
3.67	3.33	-0.34
4	4	0
3	3	0
4	4	0
3.67	3.33	-0.34
3.67	3.67	0
3.67	3	-0.67