A Comparison of Student Participation Levels by Group Size and Language Stages during Chatroom and Face-to-Face Discussions in German

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ABSTRACT

This article seeks to contribute to the ongoing exploration of computer-assisted language learning (CALL), in particular synchronous computer-mediated communication (CMC) used in a university environment, and attempts to find answers to the following two research questions: (a) How is the level of participation in communicative interactions distributed among participants? and (b) What kind of language is the language learner engaged in during small chatroom sessions in comparison to small-group face-to-face sessions? This study compared the level of participation among 27 students and contrasted their written German chatroom discourse with their oral discourse produced in small face-to-face discussion groups.[1] First, the level of participation was measured by coding the data with communication units, or c-units. Second, the overall level of participation among groups with five students was compared to groups with only four students. Finally, the study investigated the language levels produced in both discussion modes by applying a scale of language stages as described by Tschirner (1996).

KEYWORDS

Synchronous Communication in German, Computer-Mediated Communication (CMC) versus Face-to-Face Communication, Students' Level of Participation Related to Group Size, Evaluation of Language Stages Produced by German Students at the Intermediate Level

SYNCHRONOUS COMPUTER-MEDIATED COMMUNICATION (CMC)

Synchronous Computer-Mediated Communication is real-time communication via a computer network (e.g., a local area network [LAN], wide area network [WAN], or even the Internet). With a fast Internet connection, it is now possible to communicate in real time from one machine to another via video, audio, or text-based communication modes. Communication in a chatroom is text-based and students can read and write messages at the same time. Communicating in this virtual community functions on different premises when compared to com-

munication in a classroom community. Beauvois Healy (1997, p. 167) says real-time writing is a process that

> can be described as effectively bridging the gap between written and oral expression for the linguistically limited student whose oral skills are not adequate to allow for full expression of ideas in the target language.

According to DiMatteo (1991, p. 77), such descriptions of seemingly separate discursive acts "should make us note the unnaturalness of such divisions." In his view, the merging of speech and writing occurs because

> of a cognitive activity that is prior to the separation of speech and writing. This arche-writing, which is more than speech and writing and yet generates the representing activity of both modes, is the constant factor within all discourse or sign systems. […] Speaking usually carries the natural voice of the self, and writing is the acquired voice, the artful voice. In real-time writing, however, writing functions as the primary activity—it precedes speech, which first registers as a graphic representation, before it can be sounded. (pp. 77-78)

DiMatteo points to a reversal from speaking-to-writing into writing-to-speaking in a chatroom. He writes: "Writing now constructs the voice of identity, and speech acquires a silence and a secondary or supplemental quality usually reserved for writing. Speech and writing have switched traditional roles" (p. 78).

Questioning the separation of spoken and written language, Chafe and Danielewicz (1987, p. 84) concluded that "neither spoken language nor written language is a unified phenomenon [and that] there is a great deal of overlap between speaking and writing." One wonders "whether that distinction makes any sense at all, or whether there are just many varieties of a language which are available to its speakers, most or all of which varieties may be either spoken or written depending on the circumstances." These considerations and observations help us better understand the chatroom environment, which appears to merge speaking and writing.

CHATROOMS FOR MODERN LANGUAGE LEARNING

Instructors who have already used chatrooms as part of their language instruction are quick to point out the many advantages of a chatroom environment. Participation of all students in a chatroom is an argument frequently mentioned by supporters of synchronous CMC. Kemp (1993, pp. 28-29) says that InterChange (chatroom software) "allows less aggressive students more participation in the discussion, provides more thoughtful exchanges and extrapolations, and greatly reduces the teacher's natural dominance in discussions." According to Kern (1995, p. 470), InterChange supports "unfettered self-expression, increased student initiative and responsiveness, generation of multiple perspectives on an issue, voicing of differences, and status equalization." Due to this new virtual environment, teachers "are forced to rethink the classroom

itself and their relationship to it" (Kemp, 1993, p. 30). Sullivan (1993, p. 35) even states that "it is impossible for any one student to dominate the discussion as often happens in oral classrooms." Warschauer (1996, p. 8) refers to social scientists, who have found a "strong equalizing effect in computer-mediated communication." Social status, gender and other discriminating factors, which often affect the level of participation in face-to-face discussions, carry less weight in CMC. CMC also gives a voice to a number of otherwise silent groups, be it speech impaired students, deaf students (Anderson-Inman, 1996), shy and insecure students (Kroonenberg, 1996), or students who "muddle through the various stages of interlanguage, fearful of interruption and laughter by peers (Beauvois Healy, 1992, p. 460). Kelm (1992, p. 443), for example, noticed the "increased participation from all members of a class." This finding is supported by Bump (1990, p. 55) whose students reported "that the primary advantage of INTERCHANGE was that it allowed all members of the class to contribute to class discussion."

Most studies claim equal participation of students in a chatroom, or as Kern (1995, p. 461) put it, a "more democratic distribution of conversational power." Besides equal participation, the chatroom offers other advantages as well. Chun's (1996) students used InterChange to discuss a variety of topics in her first-year classroom. Chun lists several advantages of her Computer Assisted Classroom Discussion (CACD):[2] a less stressful environment in contrast to oral discussions; students have more time to think about their utterances and no worries about pronunciation. In addition, Chun's study shows that the students performed different speech acts which are commonly seen in oral conversations: they asked more questions, supplied feedback to others and requested clarification in some cases. Chun hypothesizes that the students' ability to express thoughts coherently in writing "can gradually be transferred to the students' spoken discourse competence as well" (p. 81). This concept was expressed four years earlier by Beauvois (1992, p. 463) who asks if there will "be some transfer of skills from one domain to another: from this reading-writing-thinking exercise to improved oral language?" Kelm (1992), having used the chatroom environment extensively with his 15 students of Portuguese, however, doubts such transfer of skills. He argues that the implementation of InterChange "does not imply that we [his institution] are asserting that written practice on the computer has a direct or immediate cause-and-effect relationship with increased speaking proficiency" (p. 453). However, in regards to writing, Kern mentions "another instructor [had] indicated that he noticed a significant improvement in the depth and strength of his students' arguments in assigned compositions after the controversial discussions in InterChange" (p. 470). Unfortunately, such anecdotal evidence cannot be replicated in a controlled environment.

Kern (1995, p. 461), who worked in a chatroom with second semester French students, lists the most important issues related to the chatroom environment:

(a) more frequent opportunity for students to express their ideas than in an oral discussion of equivalent duration; (b) consequently, a greater amount

of language production; (c) more time to develop and refine comments—possibly leading to greater precision and sophistication; (d) encouragement of a collaborative spirit among students; (e) enhanced motivation for language practice ...; (f) reduction of anxiety related to oral communication in a FL.

He found that students' output was of "an overall greater level of sophistication" (p. 470), and most students found InterChange very motivational. While these advantages may encourage instructors to use the chatroom with their students, it is important to keep a few disadvantages of the chatroom environment in mind.

CONCERNS FOR USING COMPUTER-MEDIATED COMMUNICATION

A few potential disadvantages are apparent when a class visits the chatroom many times during the semester. According to Beauvois (1992), students appear to become increasingly indifferent to appropriate usage of the target language the longer they make use of chatrooms. However, there are several different approaches to error correction. For example, students can be supplied with a transcript of the chat session and asked to correct their mistakes as part of their homework. Common mistakes can be discussed in class (Chun, 1996). Kelm's (1992) students corrected each other's language errors occasionally in the chatroom, but more often they corrected their own errors to assure that the meaning was clear. However, Kelm is aware that one of the disadvantages in a chatroom exists "when students copy incorrect forms from another student's message" (p. 452). Students tend to incorporate incorrect forms and wrong lexical items into their own discourse, thus lending these erroneous forms more authority in the chatroom than they deserve.

Bump (1990) regards the speed in a chatroom conversation as a major disadvantage. Since a chatroom requires no turn taking, each student can write at any time, and a huge body of text is produced. One student's reaction to this scenario, was: "it gets frustrating sometimes when a conference gets really busy and you would have no time to type anything in if you worried about reading absolutely everything" (Bump, 1990, p. 61). Colomb and Simutis (1996) mention a case where one of the conference participants had carefully composed a comment, but, by the time it was ready to be sent to the group, the topic had changed and the participant decided to delete her message. Kelm (1992) warns that there is no guarantee that some comments will even be read. Such high speed conversations run the risk of becoming less coherent, since some contributions become obsolete in a matter of seconds, if not published just in time to fit the main discussion thread. To alleviate such problems both Bump and Beauvois propose to create many small conferences (Beauvois, 1992) and limit the size to no more than four or five people (Bump, 1990). The experiment reported here followed this advice and allowed only small conferences of four and five students per chatroom channel or face-to-face discussion group.

THE STUDY

This experiment was conducted at Michigan State University during the second part of the 1998 spring semester. The study compares written German discourse produced by learners of German as a foreign language in a CMC environment by means of a chatroom with the oral discourse produced by the same learners in small face-to-face discussion groups. By the time students reach the fourth semester in German, they have had ample opportunity to practice both writing and speaking in class. Beginning German courses are taught using a communicative approach as a basis and students speak in class daily four days a week for 50 minutes. Intermediate courses also use a communicative approach as a basis but place increasing emphasis on reading and writing. Due to this balanced focus on oral and written productivity, fourth semester students were chosen to participate in this experiment. Almost two thirds of the students (63.5%) had taken more than two thirds of their course work in German at Michigan State University, and only 36.5% had studied a considerable amount of German elsewhere (e.g., in high school or community college). Most students were between 19 and 21 years old: the youngest was 17, and the oldest was 27. Most students in the fourth semester sections were Seniors at the university, followed by Freshmen, Sophomores, and Juniors. Almost half of the students (43.5%) had no or very little contact with German or had ever been in Germany for more than 5 days. For the purpose of this study, 5 days or fewer was deemed to be too little contact to have a significant impact on the students' ability to improve their German language considerably. Twenty-two and one half percent were exposed to German or went to Germany for more than 5 days but less than 4 weeks; 9.7% indicated direct exposure between 5 to 8 weeks; 4.8% spent between 2 and 6 months in Germany, and 8% spent more than 6 months in Germany.[3]

Setting

All students participated in the chatrooms and in face-to-face groups. The discourse they produced while discussing the questions from two worksheets form the basis for this study. Approximately half of the students began the task in the chatroom mode, while the other half began their discussion of the task in front of video cameras. After the first 12 to 15 minutes of discussion, all students switched their mode of communication, but they stayed together with their originally assigned group. Thus, students who had first communicated in face-to-face discussion next logged into the chatroom, and vice versa. Students received a second worksheet for their second part in the experiment. The discourse produced in the chatroom was automatically saved. The small group face-to-face discussions were videotaped and later transcribed.

Each worksheet was designed to guide the students through a series of questions without any instructor involvement. The topics for the worksheet were taken directly from the course material and were part of the regular course curriculum. Students discussed three culturally relevant topics, which were based

on their current textbook *Rückblick*.[4] The purpose of their interaction was not necessarily to answer all the questions but to provide analyzable language samples. In order to avoid what Kern (1995) refers to as "talked out," different worksheets for each 12- to 15-minute long discussion were provided with the intention of keeping the students' interest high. Kern had used a parallel design, having students discuss the same topic first in a chatroom and then assigning the same topic on a different day for oral discussion. The study described here tried to improve on Kern's design by employing a cross-over design in which students would receive new challenges after the first worksheet.

The software used was OTChat, a simple freeware program which was available at no cost at that time but which offered only one window for the students to read and write their messages. Initially, this constraint led to confusion for a few students because the text posted from other students would interrupt their own sentences. However, those students quickly adapted and used the software program successfully to communicate with the other students. The software unfortunately did not permit the use of specific German characters (*ß, ä, ö, ü*).

Participation in the Chatroom Versus Face to Face

The level of participation among students is believed to be greater in a chatroom than in face-to-face discussion groups. According to many researchers like Kemp (1993), Kern (1995), and Warschauer (1996), the level of equal participation is greater in a chatroom than in face-to-face discussion groups. This study will set out to confirm the notion that these observations will hold true.

Participation refers to the distribution of speaker contributions among the participants in a group. In this study, participation is measured by the number of c-units, a fundamental element of communication, whether that element be a longer sentence or only one word. Even short contributions have a discourse function and help the dynamic conversation process in the group. The c-unit is closely related to the T-unit. However, the c-unit is more inclusive for measuring oral discourse because it does not require a verb or predicate. Since many utterances in oral discourse lack a verb, but still communicate pragmatic meaning, the c-unit is appropriate for the analysis of spoken language. According to Loban (1966, p. 7) "communication units prove to be not exclusively semantic; they are also syntactic, being composed of independent predications; they can be identified by their form as well as their meaning." Duff (1986, p. 153) acknowledges that she "needed to adapt an operationalizable definition of a minimal unit of communication not based on syntax or phonology from that used by Loban (1966) or Brock (1985)." After studying the data from both the chatroom and the face-to-face discussion groups, which consisted of a fair amount of interlanguage data, it was obvious that many contributions did not have a verb, yet they would fulfill this definition of a c-unit by simply communicating a new thought, idea, or concept to the group members. The definition of a c-unit for this study is based on Crookes' and Duff's definition: a communication unit, or

c-unit "is closely related to a T-unit, but has the advantage that isolated phrases not accompanied by a verb, but which have a communicative value, can be coded" (Crookes, 1990, p. 184). A c-unit "could be a word, phrase, or sentence that in some way contributed pragmatic or semantic meaning to a conversation" (Duff, 1986, p. 153). For this study, the definition of a c-unit is extended to include any contribution without a verb, if it is communicative, comprehensible, and contributes to the dynamics of a group conversation.

Several excerpts from the chatroom and face-to-face transcripts illustrate how the discourse was coded using c-units. The excerpt below is taken from group 4 in the chatroom. (4-S3f stands for group 4, Student 3, female. C-units are indicated by a slash '/.').

4-S3f: *Die Leute haben ein Aufstand, / weil sie haben keine Geld / und keine Zeit, / und nicht frei Wahlen. /* (4 c-units)
4-S3f: The people have a revolt, / because they have no money / and no time / and no free elections. /

This example contains four c-units. The first c-unit is a complete main clause (*Die Leute haben ein Aufstand*), followed by a second c-unit—a subordinate clause with a verb (*weil sie haben keine Geld*). Morphological errors like *ein Aufstand* and syntactic errors like *weil sie haben* are irrelevant for c-unit analysis. The third c-unit, *und keine Zeit*, has no verb, but *haben* is implied. Although the verb is being carried over and repeated, the speaker does communicate a new concept. The decision to identify each separate element in a compound construction recognizes the challenges confronted by second language learners whose fluency is distinguished by the sheer amount of language they produce. In the fourth c-unit, the verb is implied again, but a new thought is expressed. While this example would only count as 2 T-units, because there are only two complete predicates, it totals 4 c-units by the definitions given above.

Some contributions did not qualify as c-units because they did not communicate meaning or were in English. The most commonly occurring examples are: mere affirmative statements like OK or *ja*—not answering a question; interjections like *oh*, *hm*, *eh*; use of English (code switching); unfinished, incomprehensible sentences *wenn ich in diese Zhen* 'when I in these,' and the like.

The following example taken from the chatroom consists of four c-units in four complete sentences:

4-S2m: *Was haetten sie gemacht? / Ich haette gehen. / Ich haette keine Steine geworfen. / Dieser maenner sind dumm. /* (4 c-units)
4-S2m: What would you have done? / I would have gone. / I would have thrown rocks. / These men are stupid.

The following two excerpts are quoted from the face-to-face discussions.

1-S3m: *Denkest du jetzt / wenn Deutschland ist ein Staat, ein Land /* (2 c-units)

1-S4f: *Ja /* (1 c-unit)

1-S3m: Do you think now / when Germany is a state, a country

1-S4f: Yes

The subordinate clause consists of one verb and two different objects, how-ever, *Staat* and *Land* are closely related, thus they are not counted as two differ-ent words with different meanings. The answer *Ja* by the other student (1-S4f) is counted as 1 c-unit in this case because it answers a question. However, when *Ja* is used solely as a back channel response and not as the affirming reply to a yes/no question, it is not counted as a c-unit.

Let us consider this excerpt from the group 4:

4-S2m: *Oder ist das, ist das nicht typische Männerarbeit? /* (1 c-unit)

4-S3f: *Nein*. / (1 c-unit)

4-S2m: Or isn't that, isn't that typically a man's job?

4-S3f: No.

The question asked by student 4-S2m uses the verb *ist* twice, but the entire question is only counted as 1 c-unit because it only represents one idea. Student 3's (4-S3f) reply to student 2's question is counted as 1 c-unit because it com-municates the answer to a yes/no question.

The c-units were first counted for each student in each discussion mode (chatroom and face-to-face group). All c-units were then added and the total amount of c-units per group represented was 100%. Using this absolute figure, it was possible to calculate the percentage of c-units per student per discussion mode. For example, the total number of c-units in the chatroom for group 1 was 68 units, and student 1 had 11 c-units, thus her participation rate was 16.18%. The length of the chatroom session in group 1 was 14 minutes. A different length could have changed each student's level of participation. However, it would probably have been a minimal and negligible change because it is unlikely that a rather quiet student, for example, would suddenly thrive and speak a lot to-wards the end of the allocated discussion time.

Figure 1 shows the comparison of each student's participation level within group 1. The left column represents the percentage of participation in the chatroom (Chat), and the right column shows the participation in the face-to-face discussion (F2F).

Figure 1
Participation Rates: Group 1

	S1f	S2f	S3m	S4f	S5m
■ Chat %	16.18	2.94	13.23	50	17.65
■ F2F %	7.19	13.77	17.36	41.92	19.76
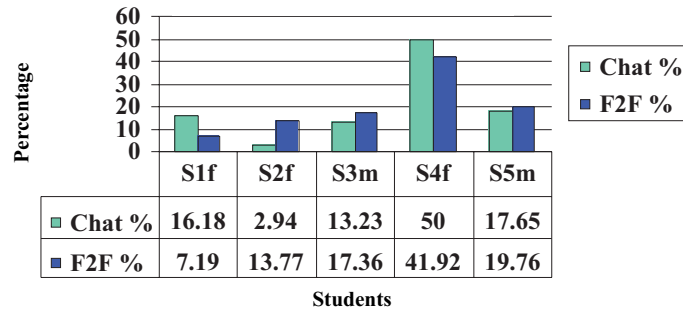
The data from group 1 do not support the widely accepted belief that participation in the chatroom is more equal than in face-to-face discussion, but these data are surprisingly different from those of the other groups. Group 1 consisted of three female students and two male students. Student number 4 (S-4f), a female, dominated the discussion in both the chatroom and the face-to-face discussion. However, she was more dominating in the chatroom (50%) than in the face-to-face discussion group (41.92%). 50% participation is very high with respect to the expected 20% average which would be the ideal average for groups with five students. Three of the five students actually participated more in the face-to-face discussion group. Consequently, the standard deviation calculated for this group was lower for the face-to-face discussion (13.14) than for the chatroom (17.73). (The higher the standard deviation, the greater the variability among participants in a group.)

Group 2 had only 4 members. Therefore, the ideal level of participation would have been 25% for each subject. The total number of c-units produced in this chatroom was 54. Overall, the level of participation in this group was very balanced (see Figure 2).

Figure 2
Participation Rates: Group 2

	S1f	S2m	S3f	S4f
■ Chat %	22.22	25.93	29.63	22.22
■ F2F %	35.16	30.77	23.08	10.99
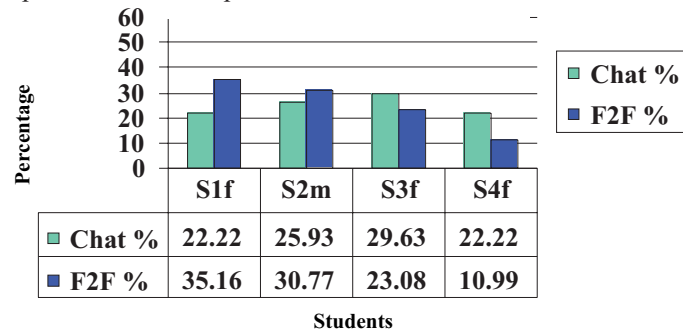
In the chatroom, student 2-S3f produced the highest number of c-units, 16, which is equivalent to 29.63% of all the c-units produced in that group. Student 2-S2m had 14 c-units, and the remaining two students each had 12 c-units. The standard deviation for group 2 in the chatroom was a very low 3.55.

By contrast, the level of participation was more uneven in the face-to-face discussion. Student 2-S1f dominated this discussion with 32 out of 91 c-units (35.16%), and student 4-S4f had only 10.99% participation.

The remaining four groups show characteristics that resemble group 2, although some groups show one or two exceptional subjects that either outperform their peers or underperform in their group discussions. For the sake of brevity, the remaining two groups with five students are presented in Figure 3, together with the data from group 1 (group 1, group 3, group 4). Figure 4 summarizes the data for all groups with four students (group 2, group 5, and group 6). As we will see, group size influenced the level of participation very much.

Group Size

In Figure 3, each student's participation in the face-to-face and chatroom discussion is represented with a bar graph, starting on the left with student 1 from group 1 (1-S1f), followed by students 2, 3, 4, and 5. The sixth bar graph is for student 1 from group 3 (3-S1f) and so on. The higher the student's participation, the higher the bar graph.

Figure 3
Participation Rates: Groups with Five Students
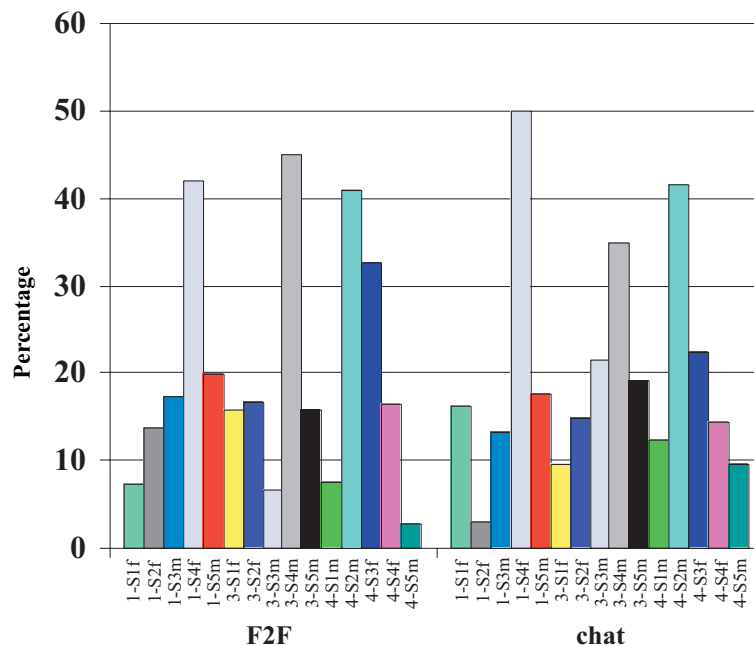
Groups with five students per group did not show the equalizing effect in the chatroom other researchers had observed in their experiments. The average standard deviation for the chatroom (12.77) was only a little lower than that in the face-to-face discussion mode (13.63).

However, the data from the groups with four students clearly support the equalizing effect of the chatroom discussion (see Figure 4).

Figure 4
Participation Rates: Groups with Four Students
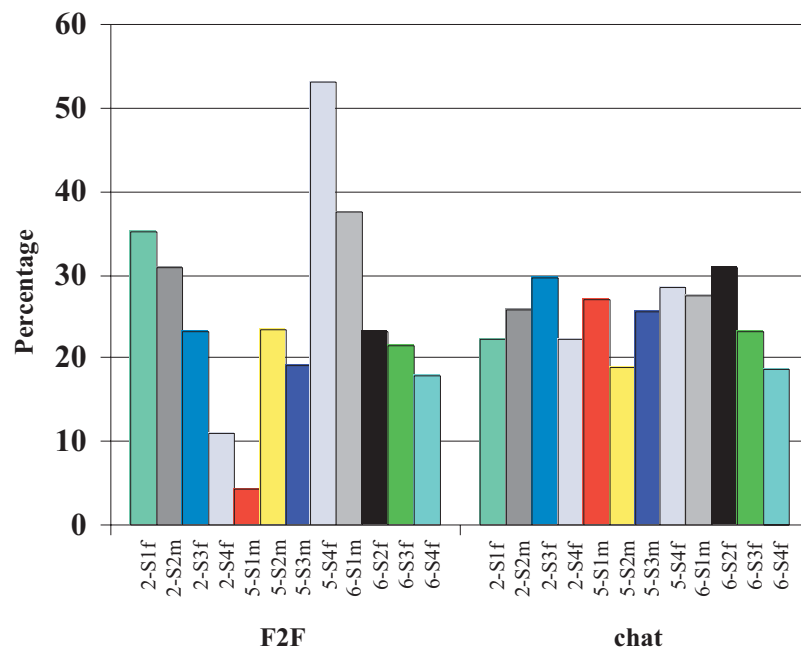
The standard deviation for groups with four students in the face-to-face discussion was 12.82 (groups 2, 5, 6), but only 3.97 in the chatroom. This finding clearly suggests that instructors should set up their small group chatroom discussion groups with four students instead of five if they want to create a discussion environment that is conducive to an equal level of participation. While there is evidence that the chatroom usually gives students the opportunity to participate more evenly, exceptions are always possible. For example, some students who feel uncomfortable typing messages may prefer speaking to chatting, but it is beyond the scope of this study to investigate all possible reasons underlying students' performances.

Table 1 summarizes the standard deviations for each group in both modes. The mean standard deviation was calculated using all students' participation in all groups.

Table 1
Summary of Standard Deviations

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Overall
F2F (5)	13.14		14.56	16.30			13.63
Chat (5)	17.73		9.44	12.95			12.77
F2F (4)		10.59			20.40	8.63	12.82
Chat (4)		3.55			4.20	5.26	3.97

The c-units of all speakers (groups with four and five speakers combined) in the chatroom and the face-to-face groups were compared in order to determine whether the difference in participation in each mode was statistically significant. The various lengths of each recorded discussion in the chatroom and face-to-face discussions were of little concern because the overall length of all chatroom discussions was 92 minutes, and the overall length of all face-to-face discussions was 93 minutes and 30 seconds.

The hypothesis stated at the beginning of this article was that the level of participation was more even in the chatroom groups than in the face-to-face groups. The sample variance for the face-to-face groups was 667.310 and that of the chat groups was 148.379. The null hypothesis was that the participation of the chatroom was the same in the face-to-face groups. In order to reject the null hypothesis, an F-max analysis was completed and showed that the variance in the face-to-face groups was significantly greater than that of the chat groups ($F = 4.497$, $p < .05$).

Language Stages

This study also explored the question of the level of communication in one mode of discussion versus the other by measuring how well students mastered certain levels of word order, from basic word order to the final verb in subordinate clauses. The hypothesis was that the more difficult levels of word order will be used correctly more often in the chatroom than in face-to-face discussion groups because the chatroom discussions left more time for the students to compose and organize their contribution whereas their contributions in face-to-face discussions were immediate and spoken sentences could not be retrieved or edited.

In his 1996 article, Tschirner presents a scale with five stages of acquisition. The original seven stages were first developed by the German research group *Zweitspracherwerb italienischer und spanischer Arbeiter (ZISA)* 'SLA of Italian and Spanish workers' and later reduced to five stages.[5] According to Tschirner, the language learner needs to master a lower stage first before advancing to the next higher one. Tschirner gives the following list, which contains some incorrect morphology with correct word order, as a guideline:

Stage 1: Canonical word order: subject–verb–complement
Er ist beboren in Rockford.
'He was born in Rockford.'

Stage 2: Adverb preposing: adverbial phrase–subject–verb–complement
In Sommer ich arbeite in die Restaurant.
'In the summer, I work in the restaurant.'

Stage 3: Verb separation: subject–finite verb–complement–nonfinite verb
Ich habe meinen Vater besuchen.
'I visited my father.'

Stage 4: Inversion: adverbial phrase–verb–subject–complement
Unter die Betten haben wir die Schreibtische.
'Below the beds, we have desks.'

Stage 5 Verb end [final verb] in subordinated clauses
Ich möchte studieren, weil ich zwei Prüfungen diese Woche habe.
'I would like to study because I have two tests this week.'

For this research project, the definition of each stage was slightly modified so that it could include all the examples present in the face-to-face and chatroom transcripts. Also, since the subjects of this study are fourth semester university students, it was decided to measure only the advanced stages 3, 4, and 5 in this data collection because the author believes that stages 1 and 2 were too elementary for fourth semester students.

To the definition of stage 3 above, the author added verb separation with prefixes (e.g., *Ich komme nächste Woche mit* 'I'll come along next week') and modal verbs (e.g., *ich kann morgen nicht mitkommen* 'I can't come along tomorrow'). The author excluded questions from stage 4 because inversion (e.g., *haben wir*) is mandatory in German when forming a question. However, he did add to stage 4 direct and indirect objects at the beginning of a sentence: *Die Schreibtische haben wir unter die Betten.* 'The desk we have below the beds.' Finally, stage 5 included relative clauses if the relative noun (right or wrong) was present and the verb was at the end (e.g., *Eine Frau, die einen schoval hielt* 'A woman, who held a shovel').

The example below shows the correct use of the more difficult structures in stage 5.

3-S3f: *Weil sie unzufrieden sind mit der Regierung* ===5c
'Because they are dissatisfied with the government'

According to the rule for word order in subordinated clauses, the position of the verb should be at the end of a "*weil*" clause. This is not the case here, however. The verb is indeed separated from the subject and the bare minimum of this sentence (i.e. *Weil sie unzufrieden sind* 'because they are discontent') does have the verb in the correct position even though another optional element (i.e., *mit der Regierung* 'with the government') follows the finite verb. Occasionally,

even native speakers would say a sentence like this in the same way. Thus this sentence, taken from the face-to-face discussion, is considered correct and coded with "===5c."

The following example (face-to-face group) is typical of an incorrect stage 5 word order. The verb is not at the end of the sentence, and there is no subject it can refer to.

> 1-S5m: *Weil sie <u>hat</u> kein, keine* ===5f
>   'Because they/she have/has no'

The tables below summarize stages 3 (verb separation), 4 (inversion), and 5 (final verb in subordinate clauses) and show the number of correct and incorrect stages used by participants in each group of students. All discussions in both modes were examined in detail. Comparisons among the various groups of students with regard to productivity or correct use of language stages are inappropriate because most discussions were of different lengths. Therefore, the data in the tables should not be used to judge any single group of students "better" than the others. The tables show only the actual number of produced stages but neither evaluate them nor have a common variable. For this reason, the data can only indicate a tendency at best. Table 2 lists the stages produced correctly (C) and incorrectly (I) in the chatroom. Table 3 shows the same stages produced in the face-to-face discussion groups.

Table 2
Language Stages: Chatroom

	Stage 3 (C)	Stage 3 (I)	Stage 4 (C)	Stage 4 (I)	Stage 5 (C)	Stage 5 (I)
Group 1	5	2	-	-	-	4
Group 2	3	-	1	-	4	3
Group 3	8	-	1	1	5	3
Group 4	18	-	1	1	4	9
Group 5	-	-	1	2	3	2
Group 6	5	-	-	1	3	4
Total	39	2	4	5	19	25

Table 3
Language Stages: Face-to-Face

	Stage 3 (C)	Stage 3 (I)	Stage 4 (C)	Stage 4 (I)	Stage 5 (C)	Stage 5 (I)
Group 1	9	1	5	5	15	7
Group 2	10	-	-	-	4	7
Group 3	6	2	1	2	5	5
Group 4	9	-	5	-	3	2
Group 5	15	-	1	8	5	16
Group 6	5	1	-	5	3	6
Total	54	4	12	20	35	43

It is useful to explore the overall ratio of correct and incorrect uses of each stage in each discussion mode. By comparing the stages in each mode, it is feasible to derive a conclusion about the use of language levels in the modes of discussion.

The data in the tables above show that students produced more syntactic stages, right ones and wrong ones, in the face-to-face discussion than in the chatroom. For example, stage 3 (verb separation), which students appear to have mastered according to the data, was produced 41 times (39 correct, 2 incorrect) in the chatroom, while students used it 59 times (54 correct, 4 incorrect) in the face-to-face discussions.

Stages 4 (inversion) and 5 (final verb in subordinate clauses) were not mastered by the students and were used less often. Students produced the fourth stage 4 times correctly and 5 times incorrectly in the chatroom (44.4% vs. 55.6%) and 12 times correctly and 20 times incorrectly in the face-to-face discussions (37.5% vs. 62.5%). The production of stage 5 was equally challenging for students. In the chatroom, stage 5 was used 19 times correctly but 25 times incorrectly (43.2% vs. 56.8%), and, in the face-to-face groups, students produced 35 correct instances of stage 5 and 43 incorrect ones (44.9% vs. 55.1%). These results suggest that these fourth semester students had some control over stage 3, rarely produced stage 4, and, while they produced many more instances of stage 5, the majority of them were wrong regardless of the discussion mode.

Figure 5 provides a graphical representation of the total number of stages from Table 2 and Table 3 above. The incorrectly used stages are represented by negative numbers, the correctly used stages by positive numbers.
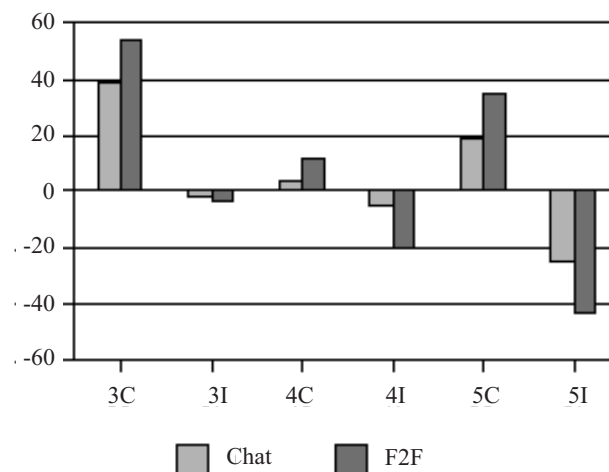
Figure 5
Stages and Numbers

Figure 5 shows that stage 3 was used correctly most of the time, followed by stage 5. Again, stage 4 was used less often than stage 5, which it is to precede—in theory—since learners of German are expected to successfully master one stage before advancing to the next one. Why students had a preference for stage 5 remains speculative. However, the students always produced more incorrect stages in the face-to-face discussions except with stage 3 (verb separation) which they seemed to have mastered.

As Figure 6 indicates, stages 4 and 5 were used more often incorrectly, which is an indicator that some students were not yet ready to produce stage 4 and 5 correctly, while others handled stage 3 with only minor problems.
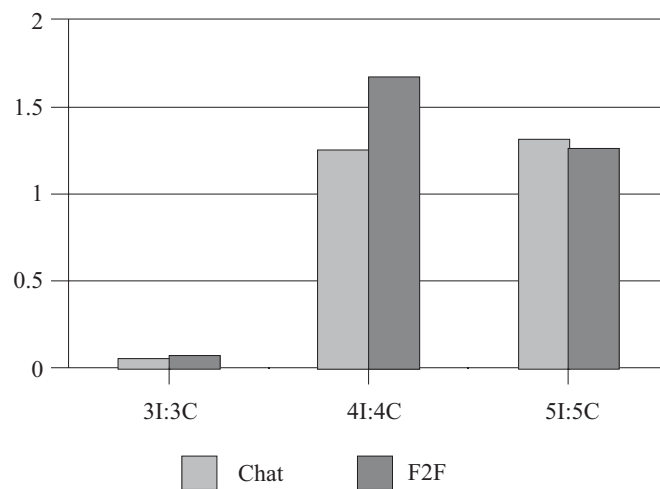
Figure 6
Error Ratio of the Stages

Figure 6 compares the error ratio of incorrect versus correct use of the stages. A ratio towards zero indicates an almost error-free use of the stage (e.g., stage 3). Students used stage 4 and stage 5 incorrectly most of the time. However, they did not attempt stage 4 very often, for whatever reason. In the face-to-face discussion mode, they handled stage 5 more successfully than stage 4. The students made fewer mistakes in the chatroom when dealing with stage 3 and stage 4, but they made almost the same amount of mistakes with stage five, regardless of the mode of communication. (A ratio of >1 indicates that students made more mistakes than correct uses.)

Limitations

This experiment unfortunately had a few limitations. It would have been helpful to the analysis of data if the students' proficiency in German had been evaluated before the project began because the differences in language proficiency

within a group could have been a factor in the different levels of participation. Second, a pre- and poststudy questionnaire would have added more knowledge about the students' attitudes towards both discussion modes, a variable which could have affected their level of participation.

One of the most critical variables in the production of chatroom language was the students' level of computer and typing skills because a student with only rudimentary typing skills would most likely have produced fewer words per minute than a student with advanced typing skills. Such a possible discrepancy could have affected the c-unit count per student.

The free chatroom software OTChat offered only one window in which students had to read and compose messages at the same time. As a consequence, the students' utterances were sometimes interrupted by other students' contributions. Also, a few subjects expressed their initial frustration with the software but quickly adapted to this new communication environment.

SUMMARY

In summarizing these findings, it can be stated that the chatroom is a unique, virtual environment for communication in the target language. Participation, in general, was more evenly distributed among chatroom groups, and it was noted that the groups with only four members profited most from the equalizing effect of the chatroom.

With regard to the language stages, this experiment revealed that the most difficult stage 5 (final verb in subordinate clauses) was used often by students, as was the less difficult stage 3 (verb separation). However, stage 3 was used correctly most of the time in both discussion modes, while students often made mistakes when expressing their ideas with a stage 5 construction.

FUTURE RESEARCH

This experiment was limited to certain points of interest set forth by the principal investigator. Further research may provide answers to questions which were not covered in the project. For example, it is important for foreign language teachers to have data at hand that provide evidence that an initial chatroom-based discussion sets the groundwork for a more productive discussion in the classroom. Ideally, most students would explore topics in the chatroom and then come into the regular classroom to discuss all those issues touched upon in the chatroom. In face-to-face classroom discussions, students often appear to be hesitant to share their opinions, while the chatroom provides a climate of more openness among students (Bump, 1990). Such an investigation should focus on the pedagogical design and objectives in the chatroom (Salaberry, 2000) as well as the entire teaching unit.

Further studies should also investigate the ideal number of students in small chatroom discussion groups. This study showed that those groups with only four students per group achieved a high level of equal participation in the

chatroom. It may well be possible that the level of equal participation is even higher in groups of only three or two students. The observations presented here are based on only 12 subjects who were distributed over three groups with four students each. Further studies should have more subjects and assign students of equal proficiency level to matched groups. If students' proficiency level of German had been assessed before the experiment, it may have been possible to track students of different proficiency levels and measure how much students of various language levels would have profited from the chatroom and face-to-face environments.

Tschirner (1996) affirmed that stage 5 is to be mastered by students after stage 4, which, in turn, is preceded by stage 3, in theory. This study, however, showed a somewhat skewed sequence with regard to stages 3, 4, and 5. As expected, stage 3 was mastered by many students, but stage 4 was rarely used while stage 5 was used more often, albeit more often incorrectly than correctly. Future research may inquire about how and when certain grammatical features are employed by students in the production of German. Such investigations may eventually lead to a reconsideration of the sequence in which grammatical structures are taught and practiced in class.

In conclusion, the author hopes that the observations and findings from this study will encourage the use of chatroom discussions as an integral part of language instruction. Chatroom discussions give students an additional opportunity to practice their communication skills in a different medium. The discourse produced in this new medium is a hybrid of written language and spoken language, and chatroom discussions may likely be beneficial to both skills. The rapid development of Internet-based communication will certainly continue, and students with L2 chatroom experience will be well prepared to function in this virtual environment.

NOTES

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[1] Originally, 63 students from four different fourth semester German sections volunteered to participate in this project during regular class time. During the course of this study, a few modifications regarding the number of groups and subjects involved had to be made:

1. At times, speakers could not be identified often enough to contribute to the count of turn taking per student.

2. A couple of groups changed the number of their members during the experiment, rendering their inclusion in the analysis invalid.

3. Gender related observations became more important over time, but the original experiment assigned students to groups at random. Because of this, the groups with only one gender represented had to be dropped. However, after completion, the gender-related investigation was inconclusive and considered not important to the overall goals of the study.

4. There was only one group with six students, and it was decided that a comparison between the six-member group and the four-member groups was not ideal with regard to turn taking. Consequently, the group of six students was dropped from further analysis as well. As a result, the total number of subjects included in the analysis dropped to 27.

However, the author of this study considered the remaining 27 subjects to be still representative of the original group of students because this group had 15 females and 12 males remaining, while the original group had 33 females and 30 males. Of the original 13 groups that participated, only six qualified for analysis.

[2] Computer Assisted Classroom Discussion (CACD) is a term used by Bump (1990) who refers to Butler's (1989) article "The Construction of Meaning in an Electronic Interpretive Community."

[3] A few students did not answer this question.

[4] Worksheet No. 1 (*Teil 1*) shows a photo (*Bild Nr.1*) of two youths throwing rocks at a Russian tank; worksheet No. 2 (*Teil 2*) depicts a propaganda poster from the former GDR showing Adenauer and Eisenhower reaching out for the GDR industries (*Bild Nr.2*) and a picture of a statue depicting a woman in working clothes holding a shovel (*Bild Nr.3*). All students were given worksheet 1 for the first part of the experiment and worksheet 2 for the second part, regardless of their mode of communication. Altogether, both parts consisted of three pictures and a series of open-ended sequentially marked questions. Although the first worksheet covered only six questions and the second worksheet had seven questions, both worksheets were designed to provide the students with a sufficient amount of questions for a 12- to 15-minute long discussion period.

[5] In *Deutsch als Zweitsprache*, Clahsen, Meisel, and Pienemann mention these 7 stages (97-164): I *Einkonstituentenstufe*, II *Mehrkonstituentenstufe*, III *Voranstellung von Adverbialen*, IV *Stellung zusammengesetzter verbaler Elemente*, V *Subjekt-Verb Inversion*, VI *Satzinterne Stellung von Adverbialen*, and VII *Verbstellung in Nebensätzen*.

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