

The Hybrid Classroom: Utilizing a Learning Management System in a First-Year German Class

Monika Fischer, University of Missouri, Columbia, MO

Introduction

Online and e-learning courses have received considerable attention in the last decade and are used widely by adults who want to advance their career. A drawback for learning a language online is the lack of direct, spontaneous contact with the L2 language. Also for young adults entering college at the age of 18, online classes require a high degree of maturity and responsibility. As Jackson states, "Adult students are more likely to succeed in online education than a traditional college student because adult students have more maturity and responsibility." Thus, for young college students an online course is often not suitable. However, online or e-learning methodology offers certain advantages such as instant error recognition and correction through pull-down windows. It also fosters an individualized learning pace and a non-threatening environment and the use of technology in the foreign language acquisition environment is by now widespread and diverse (Conrad and Donaldson). With technology advancing further, second language acquisition and pedagogy profit from the student's easy access to computerized materials and free access to Internet sites that offer exercises and self-help tools.

A newer development is the hybrid environment that blends face-to-face teaching with computer assisted methodology to promote active and independent learning where students are more involved in the knowledge process. The goal is to pair the best features of in-classroom teaching with the best features of online teaching. Recent research has highlighted the advantages of this blended learning environment for all language skills and levels (Goertler and Winke; Grgurovic). This new approach to language learning and teaching asks for a new pedagogical framework that encourages self-directed learning, critical thinking skills, problem-solving skills, time management, and computer skills. This article examines a hybrid first-year, first semester German course at the university level that focuses on the development of language skills, in particular oral and structural proficiency, through implementation of technology. The course model is discussed and evaluated in comparison to five other sections concurrently taught using the same assessment criteria (tests, quizzes, writing, listening, and speaking assignments).

The LMS Environment

A major tool in the use of educational technology in a creative and innovative manner is the creation of a virtual campus that implements a Learning Management System (LMS) like Blackboard, WebCT, ANGEL or Moodle. The aim of the hybrid campus is to

- introduce students to a virtual learning environment and the value of online learning
- increase individual oral proficiencies outside of the classroom
- provide grammar pattern drills and an individual learning environment
- provide a less intimidating learning environment
- require the students to be on task and to be responsible for their progress.

Thus, Learning Management Systems have the potential to turn the conventional classroom format into a hybrid or blended course format that allows for both collaborative interaction among students (synchronous and asynchronous) and an individual based learning model

with self-contained study phases. In addition, they provide a set of tools that support an inquiry- and discovery-based approach to online learning.

To move from using technology simply as an additional support tool for students in certain skill areas outside of the classroom to integrating it as a substantial part of the learning environment requires a pedagogical framework that keeps the stress on social interaction between teacher and students and among students themselves. Also to balance the gap between communicative competence and academic content knowledge, productive and receptive skills have to be at the forefront (Steinhart). An important consideration is how to keep the communicative aspect and an active, productive, and discovery oriented learning (*handlungsorientiert*) environment that stresses learning by doing. Theoretical research has shown that students retain 90% of what they are learning when doing their own exploration while overcoming difficulties compared to only 10% through reading, 20% through listening, 30% through seeing, 40% through seeing and listening, 60% when discussing the material and 80% when formulating and discovering by themselves (Gudjons 8; Gugel 39). Donath sees the importance in project work when looking at the potential of new technologies and telecommunications not just for language learning but also for the development of intercultural competence.

In addition, process-oriented learning tasks focused on a joint product and shared on the Internet are a tremendous motivation for learners to engage in language learning (Cooper and Victory). The topics dealt with in the context of such projects can range from political and historical to popular culture themes reinforced by using authentic material. In connection with the film *Edukatoren*, for example, students can research the history of the Rote Armee Fraktion (RAF) in Germany and make connections to similar organizations in Europe and the US at the same time. Another example would be listening to Brecht being interrogated by the HUAC or Thomas Mann's radio speeches in a course on "Weimar at the Pacific." Even though this is done in English in the lower level language classes, the engagement in cultural topics can lead to higher motivation to learn the language of that culture.

A major task for a hybrid course is the development and provision of new individualized modules for foreign language teaching and learning and the expansion and utilization of the Blackboard environment. This has been simplified with the free access of a plethora of tools and material on the Internet and with supporting tools provided by Blackboard (see Appendix A). Also language textbook presses have been expanding their online materials by adding Quia workbooks, an e-learning platform, as well as connecting their textbooks to websites and online centers, and offering audio files and video clips on interactive CD-ROMs.¹

The Hybrid Classroom: a technology enhanced learning experience

Since the University of Missouri provides Blackboard, our language classes have been using this LMS for several years and my colleagues and I have gradually expanded Blackboard beyond an information tool by adding audio files with specific tasks requiring students to work individually as well as with a partner. However, substituting classroom time with online time had not been done until the hybrid course was offered parallel to five regular scheduled sections in fall 2007 and then again in 2009. The hybrid course is presently offered again. One problem for us is a high turn-over of teaching assistants who come with very little teaching experience. Thus, we decided to teach the course ourselves (alternately between three of us) and work together on collecting material. Our goal is to offer the hybrid taught

¹ Some educational presses like McGraw-Hill, Cengage Learning Service Direct or Houghton Mifflin have started to give students free access to audio files on their websites as well as to invite instructors to regionally held workshops.

course on the next level (second semester German) and train teaching assistants to increase the use of online tools in the traditionally taught classes.

Blackboard has proven to be quite suitable for language courses and the hybrid class was able to expand the use of the various tools offered: chats, WIMBA (for easy audio recordings), built in lesson folders, course email, calendar function, attendance manager/dashboard, drop boxes, grade book, surveys and tests.

In the last couple of years, my two colleagues and I have developed and implemented several e-learning modules for the first semester German language learners with the help of an internal grant as well as a research grant from the DAAD.² Thus, in fall 2007, the department offered one of six first year German language sections as a hybrid model. The class used the same textbook, *Jägerbuch Band I-III* as the other sections and wrote the same tests and quizzes.³ As a measure of caution the five credits class was scheduled in a classroom and space was not given up. After the initial introductory phase one third of the class was moved online. The online section required each student to complete drills and worksheets as well as to post and to respond to audio files and video clips, thus allowing more intense individual listening and speaking outside of the classroom. Individual reinforcement of structural patterns is well suited for the Blackboard environment and allows linking to accessible exercises from existing websites (see Appendix). To summarize, our focus was on utilizing Blackboard as an interactive and intercommunicative tool allowing:

1. higher individual flexibility for the instructor and the student,
2. the utilization of vast support sources from the world wide web,
3. no costs neither for the instructor nor for student since Blackboard is software supplied by the university,
4. the promotion of guided structural proficiency outside of the classroom,
5. the promotion of speaking proficiency outside of the classroom.

The goal was to compare structural and speaking proficiency between the five regularly taught classes and the hybrid class. The grading scale was the same as for the regular classes with online activities incorporated into all areas of grading. The syllabus of the hybrid course stated the same goals and requirements as the regular taught courses with additional references to the online segment.

Learning Modules

Following is a sample of different learning modules suitable for the hybrid environment, which concentrate on listening comprehension and oral proficiency. For listening comprehension a variety of internet-based or self-recorded digital resources is used, didacticized and provided with worksheets for specific assignments to students with different language levels.⁴ These exercises are assigned in addition to regular textbook-based work. The main goal is to increase language exposure outside of the classroom and provide additional grammar drills directing students to specific websites and platforms.

a) Self-Recorded Listening Exercises: various instructors wrote and recorded short fictitious listening texts based on the real characters Heidi Klum & Seal. Each was accompanied by a worksheet with written questions. Students listened to audio files lasting between 2-3 minutes talking about an event in Heidi Klum's life. The questionnaire tested comprehension with

² Thanks to Olaf Schmidt, Megan McKinstry from the University of Missouri and Matthias Vogel from the University of Oregon who all collaborated on this project.

³ K. Eckhard Kuhn-Osius and Annette Kym. *Access To German Jägerbuch Band I, II and III*. McGraw Hill Primis Custom Publishing, 2002. Developed by the German Department of Hunter College, CUNY.

⁴ Students could use the (free) open source software <http://audacity.sourceforge.net/> and/or Wimba, a fairly new Blackboard tool, or iPods with microphones provided by the university.

simple recall questions: “Wo ist Heidi? Was macht Heidi in Deutschland?” and more complex content questions like: “Warum lernt Seal wirklich deutsch?”. It took very little time for the instructor and proved to be popular with the students as the final class evaluation showed.

b) Didacticized Music Videos: the lyrics of the song “Nur ein Wort” by the group *Wir sind Helden* serves as an example here. We embedded the URL from youtube.com on Blackboard <http://www.youtube.com/watch?v=CVmXgOQNtNQ> so that students had instant access to the site. German music videos, effectively didacticized for different language levels, are a highly popular element of technology-based teaching. YouTube videos were often embedded on the Blackboard course page. Additionally, worksheets and exercise instructions were provided. With the “Nur ein Wort” video, students had to explain or conjugate the highlighted nouns and verbs shown in the video at home (e.g. sehe, denkst, geschrien, Wörterbuch, etc.). During class time, students were asked to recognize the terms provided on the cue cards that had been shown in the video and to write down examples for all different word types by creating word associations and mind maps before forming meaningful sentences with known and new vocabulary.

c) German Films: Two German films are usually viewed during language courses outside of class time. English subtitles are used for the most part in first-year German. Before and after viewing, students have to complete interactive worksheets on the films in groups of three to four as well as to come up with two content questions that are discussed on a chat platform. Every group has to post two questions and answer two questions from another group. The chosen films explore cultural and ‘Landeskunde’ concepts with information and questions given in English. For example, the documentary “Heimatklänge” gives an introduction to Switzerland as well as the concept of “Heimat” and allows an exploration of the sound of language.

d) Narration Video Exercises: Students were assigned to record narrations for a variety of videos. For example, students had to describe their room in the beginning of the semester by filming or taking a picture of their room and by providing a commentary (description, request for different furniture, before and after party/cleaning, etc.). The tasks became progressively more difficult towards the end of the semester asking students to retell, for example, one of the episodes from the textbook or act out a dialogue with another student. *Jägerbuch* uses the format of soap operas as the basis for texts that follows the lives of four university students, which serves well as conversation material. Students recorded their German narration on iMovie or Windows Movie Maker. After a short adaptation period, the hybrid students had no problem mastering homework assignments and using video applications. The open-ended quality of exercises ensured high creativity and language production which reinforced listening and speaking skills.

e) Pronunciation & Reading Exercises: various audio files with pronunciation exercises from the textbook or other sources are placed on Blackboard. Pronunciation and basic reading exercises are a crucial part of achieving our oral proficiency objectives in the elementary German hybrid course. They are therefore assigned on a daily basis. Students use Audacity, Blackboard’s WIMBA or iPods to record their voices. Pronunciation is evaluated and commented on by the instructor once a week.

f) Grammar/Structural Drills: Students are frequently assigned to complete cloze exercises from various websites (see Appendix) that concentrate on specific structural elements. Whenever possible they have to save their work and post the result or the work on

Blackboard or hand it in. For these exercises students have to be motivated since many cloze exercises provide instant feedback and are meant for self-study.

g) In-Class Video Exercises: Research has shown that inadequate preparation of students working with online technology has been a problem with CALL (Barrette, Goertler and Winke). Thus, training sessions are implemented at the beginning of the semester in order to familiarize students with the applied technology. Critical issues are handling the application, ensuring quality recordings, and learning time management skills. A few instructional videos have been created by the instructor and posted so that students can view those anytime during the semester to refresh their memory of how to record or post a video, etc.

h) Group Video Homework: ex. "Mein neuer Mitbewohner". Frequently assigned on Fridays, when no regular class is taught, group assignments force students to meet outside of class on a regular basis. Normally, topical conversations have to be created, recorded and complemented with images based on either an episode of the textbook characters or a given, hypothetical situation. These exercises create the most enthusiasm among the students throughout the semester. The best films are honored with "Hybrid Oscars" during the last week of class. Students come up with highly creative presentations that are accessible to all on Blackboard.

Evaluation of the Hybrid Classroom

An important part of the hybrid course project consists of various course and student evaluations. Our first semester sections have an enrollment capacity of 20. The hybrid course is now offered for the third time.⁵ The following evaluation concerns the first two times the hybrid section was offered.

Students in the hybrid section were asked to give their opinion during two evaluation sessions in the middle and at the end of the semester on a number of course-related subjects: motivation, effectiveness of course structure, evaluation of technology tool, efficiency of technology-based exercise types, general strength and weaknesses and course atmosphere. In terms of motivation, students provided rather surprising results. The first time the hybrid section was offered, only a relatively small number of students (15%) enrolled in the hybrid course because of an interest or background in technology, an even smaller number (5%) enrolled out of curiosity for the hybrid-teaching concept. The vast majority signed up for basic scheduling reasons (40%) and flexible time management (25%) and 15% of the students offered no reason at all. What is called "flexible time management" actually translated for a significant number of students into "less in-class work" and thereby less work in general, compared to a regular language course, while receiving the same number of credit hours. Although this misconception about the actual course workload was addressed the first day and became apparent at an early stage of the semester. It took a number of mostly Freshman students a few weeks to adapt to the autonomy and self-reliance of the hybrid learning process. The second time the course was offered produced similar results. Presently, we do not advertise the course differently than the other courses due to its experimental nature but are considering doing so in the future. We placed flyers on bulletin boards and added an explanation in the online catalogue about the different nature of the hybrid course compared to the regular taught first semester sections.

Course- and technology-related evaluations provided a valuable feedback on the course structure and the efficiency of the hybrid teaching modules we had developed for the different language skills. Student impact and content coverage problems led to an adaptation

⁵ The first hybrid section offered had an enrollment of 15 with the other sections at 19, 18, 15, 17, 20. The second time the course was offered enrollment was 19 with the regular sessions as 15, 20, 12, 16, and 20.

of the projected 60–40 in-class/out-of-class ratio which could not be maintained throughout the semester. Six extra classes needed to be taught in order to further explain technology features and grammar content, as well as to provide insecure students with instructor feedback on problematic course topics. An eventual 70–30 ratio (in class – online) was reached and comfortably applied to the seminar. This ratio and set-up was kept the second time the class was offered.

In terms of our technology-based teaching modules, the evaluation process delivered outstanding results in regard to the efficiency of particular exercise types. While the daily oral assignments quickly turned into routine homework, they were nevertheless considered superior to traditional introductory language course assignments. Highlights of the out-of-class online work process included single student and group video projects with generally open-ended tasks, the use of embedded YouTube music videos and short film clips, and the utilization of student recordings for listening comprehension and reaction assignments. Written discussion board assignments received mixed reviews while lecture recordings and instant messaging were regarded as ineffective for the learning process.

In regards to communication and technology tools as adapted by us, Blackboard in particular was seen as an effective course website and database and received great praise. The distributed iPods with microphones earned far less enthusiastic comments, mainly for their function and compatibility problems. Despite a short adaptation period, online recording applications like Audacity, iMovie, and Windows Movie Maker were considered valuable and successful additions to a university language course.

The evaluation of the learning results was carried out on three different levels, firstly by the students themselves, secondly by the instructor based on student performances and engagement, and finally by instructors of second semester German courses during the following semester who compared the specific language skills of the “hybrid students” with those who had completed a traditional first-semester language course. We took a variety of communicative tasks that progressed in difficulty – scripted and unknown teacher scripted questions, planned to spontaneous interactions with other students – and compared the performance of the students coming from the hybrid class to the other students. For that purpose, the instructor(s) of the hybrid class went to the classes taught by teaching assistants and helped evaluate the performance. We found that students from the hybrid class displayed low anxiety and stress and were more comfortable in situations that asked for independent spontaneous responses.

There was no significant difference of students who withdrew from the courses compared to the other sections since students knew about its hybrid nature and were aware that they were asked to do a significant part of the course online.

At this point there is not sufficient evidence that suggests that blended, Blackboard based classes lead to higher performing students, however, our outcome was positive in terms of enthusiasm and retaining high interest. One important parameter was comparing the test scores from the hybrid class with the other five sections since all sections took the same quizzes and tests. No discrepancies were found that would indicate a higher or lower learning curve. Yet, end of the semester evaluations showed that students in the hybrid section had fun, were highly motivated, and appreciated the flexible schedule. Speaking assignments were done enthusiastically; even though, it is too early to say that over time it will make a significant difference. Nevertheless, it has been a positive experience, in part because we did not rush into a 50/50 split classroom but played it safe by keeping the classroom space and time which allowed us to add more classroom time in the beginning of the semester as well as it gave us a peace of mind in case there would be evidence of failure.

As instructors, we were concerned with the time consuming task of viewing and listening to audio and video production. In regard to audio files, we decided to listen in only partially or randomly since the process of speaking has a learning curve that is only minimally influenced by instructor feedback. The seemingly time-consuming task of viewing the video productions turned out to be quite manageable since the projects were very short and easy to view online. Grades were given on a done/not done basis for all audio and video postings, unless otherwise specified.

Students are often insecure about their knowledge of grammar structures. We place high value on simple grammar drills and found cloze exercises that allow immediate feedback to the student the most effective. This finding, however, can only be verified in a controlled classroom environment and is dependent on individual student motivation outside of the classroom. Since it was not feasible for us to create and place such time consuming exercises on Blackboard and since a multitude of material is available for free online, we explored and exhausted such material and gave specific sites as homework and study guide. Thus, we chose to sidestep placing individual cloze exercises on Blackboard and used structural and cloze exercises from existing websites as well as concentrated on creating audio files, utilizing YouTube clips and podcasts (for ex. *Deutsche Welle*).

Conclusion

It is safe to say that students in a hybrid-learning environment advance foremost in their speaking proficiency (Hokansen and Payne). This assumption was confirmed by the students who felt very confident to be able to express themselves in a conversation on general topics as well as by the second semester German instructors who overall found the speaking skills of the “hybrid” students superior to the “non-hybrid” students. In this regard, the concept of increased language exposure and constant out-of-class speaking assignments paid off in the form of improved oral proficiency and listening abilities, although grammar and writing skills had to be considered at an average in comparison to traditionally taught sections.⁶

To summarize, the advantages of a hybrid classroom for the students are a more flexible schedule, individual learning pace, a choice of individualized pattern drills as well as exposure to extensive listening and speaking exercises outside of the classroom. In the long run, the advantages for the higher education institution are the gained space that a reduced face-to-face class allows and offering incentives for enrollment to the non-traditional student who needs a more flexible schedule.

The obvious advantage with a system that allows the posting of audio files for listening and recording is that students who in a regular sized class do not get to speak much can perform in an environment that is less intimidating than the classroom. Another advantage is that students are more accountable than merely being present in the classroom.⁷ The time spent with CALL (computer assisted language learning) requires active involvement of the individual student. The instructor’s task, however, is to make sure the workload stays within the given credit hours of the course. Altogether, using a Learning Management System that stresses oral proficiency can be a satisfying and rewarding experience for both instructor and student. We conclude that this experience has been positive for us and has the potential for expansion.

⁶ We compared the written work of test and quiz scores of the students coming from the hybrid class to the students who took their first semester of German in a regular class. Students were separately tested on oral skills by preparing and then acting out different skits.

⁷ Blackboard provides tools like “performance dashboard” or “course statistics” that track students log in record as a means of checking attendance.

Works Cited

- Barrette, Catherine. "Students' Preparedness and Training for CALL." *CALICO Journal* 19.1 (2001): 5-36.
- Conrad, Rita-Marie, and J. Ana Donaldson. *Engaging the Online Learner: Activities and Resources for Creative Instruction*. San Francisco: Jossey-Baas, 2004.
- Cooper, Kathleen B., and Nancy J. Victory. *A Nation Online: How Americans are expanding their Use of the Internet*. Washington, DC: US Department of Commerce, February 2002. 20 July 2007. http://www.ntia.doc.gov/ntiahome/dn/nationonline_020502.htm
- Donath, Reinhard. *Internet und Englischunterricht*. Klett Verlag, Stuttgart, 1997.
- Goertler, Senta, and Paula Winke. "The Effectiveness of Technology-Enhanced Foreign Language Teaching." *Opening Doors through Distance Language Education: Principles, Perspectives, and Practices*. Eds. Seanta Goertler and Paula Winke. San Marcos, TX: CALICO, 2008. 233-260.
- Grgurovic, Maja. "Research Synthesis: CALL Comparison Studies by Language Skills/Knowledge." 21 May 2007. Iowa State University. <http://tesl.engl.iastate.edu:591/comparison/synthesis.htm>
- Gudjons, H. *Handlungsorientiert lehren und lernen*, Bad Heilbrunn, 3.Aufl. 1992.
- Gugel, Günther. *Methoden-Manual I, Neues Lernen*, Weinheim/Basel, 1997.
- Hokanson, Sonia G. "Distance Education in Foreign Languages." *Rocky Mountain Review of Languages and Literature* 54.2 (2000): 85-93.
- Jackson, Carron. "Online Learning vs. the Traditional Classroom." December 15, 2006. <http://www.nyu.edu/classes/keefe/waoe/cjack.htm>
- Payne, J.S. and Brenda M. Ross. "Synchronous CMC, Working Memory, and L2 Oral Proficiency Development." *Language, Learning & Technology*. Sept. 2005, Vol. 9, No. 3: 35-54.
- Quia.com: Company Info*. 2008. Quia Corporation. May 10, 2009. http://www.quia.com/company/company_info.html
- Steinhart, Margot. "Breaching the Artificial Barrier Between Communicative Competence and Content." *The Modern Language Journal* 90 (2006) 258-262.

Appendix A

Samples of Open Source websites

Familie Vokabeln

http://atschool.eduweb.co.uk/rgshiwyc/school/curric/german/Deutsch_Anfanger/Familie/6.htm. Students can fill in the proper family terms and check their score.

Dartmouth Exercises - <http://schiller.dartmouth.edu/~kartoffel/>. Students can be directed to various exercises.

German 101 Exercises - <http://www.nthuleen.com/101/index.html>. Provides a large number of exercises for Introductory German. *Hausaufgaben* offers various grammar topics.

Kontakte Online Learning Center - <http://www.csuchico.edu/flng/german/kontakte/>.

These **Kontakte online** activities accompany the textbook and workbook. They can be used for homework and in-class activities. The textbook is not needed.

Hueber Online Exercises

<http://www.hueber.de/shared/uebungen/schritte/lerner/uebungen/>. This is an Online German Course offered by the Hueber Publishing Company. The **Hueber exercises** are easy to use for homework or lab sessions.

Schubert Exercises - http://www.schubert-verlag.de/aufgaben/uebungen_a1/a1_uebungen_index_z.htm. This is another website with online exercises suitable for self-study.

University of Michigan - <http://www.lsa.umich.edu/german/hmr/index.html>. Resources for German teachers and students.

Important German Phrases - The Travel Linguist - German 101.

<http://www.youtube.com/watch?v=NzFMTLAJYrk>. This is a short exercise on youtube.com teaching 10 survival phrases for travelers to Germany. One learns for example how to ask for the bathroom.

Quizlet - <http://quizlet.com/>. This free site provides flashcards and study games as well as an easy platform to set up quizzes.

Zum Wiki - <http://wiki.zum.de/Hauptseite>. **Zum Wiki** is an open platform with an array of exercises. Teachers and students can create their own vocabulary exercises.

Hot Potatoes - <http://hotpot.uvic.ca/>. The **Hot Potatoes** site enables the instructor to create interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises for the Internet. **Hot Potatoes** is freeware, and may be used for any purpose or project. It is not open-source.

Mylörn - <http://www.myloern.com/portal/index.php?progsprache=en>. With **Mylörn** students can create their own vocabulary dictionary, practice vocabulary individually, create vocabulary lists and flashcards, organize vocabulary in groups, crosslink vocabulary, exchange vocabulary with others.

Twitter on Deutsch als Fremdsprache (DaF) - http://wiki.zum.de/Twitter_in_DaF, <http://tweepml.org/Deutsch-als-Fremdsprache-DaF-Lehrende-und-Ressourcen/>. Both sites give various twitter addresses that deal with DaF; for example, <http://twitter.com/dafblog>.

Blogs and Self-Study

http://wiki.zum.de/Blogs_und_Wikis_f%C3%BCr_Deutsch_als_Fremdsprache

<http://www.dietz-und-daf.de/DaF-Matlern.htm>

<http://deutschlernen-blog.de/2006/09/12/grammatik-uebersichten-funtionsverbgefuege/>

<http://people.ischool.berkeley.edu/~nunberg/lunchroom.html>

<http://languagelog.lidc.upenn.edu/nll/>

<http://www.deutschlernen.net/>

<http://www.germanwordsexplained.com/blog/index.php/category/deutsch-als-fremdsprache/>

<http://groups.diigo.com/group/deutsch-als-fremdsprache>

<http://cornelia.siteware.ch>