CHAPTER 21.

WRITING AT RWTH AACHEN (GERMANY): LESSONS FROM "TECHNIK IM KLARTEXT"

By Vera Niederau and Eva-Maria Jakobs
RWTH Aachen (Germany)

This article introduces the measurements and aims of the "TiK" (Technik im Klartext) project at the RWTH Aachen; the project flourished from 2001 to 2005 and has been recently restructured. Focused on popular writing about science, TiK aims to build interest in science and engineering careers among pre-university students and to teach university students important skills in reaching wider audiences. Some chosen components of the (teaching) concept will be presented. The impact of the project will be reflected on, problems and conditions discussed, and prospects for the future given.

Conveying science to a broad audience occupies an important place in Germany. The public as well as research foundations increase their support for it and it is seen as an essential component of communication. The transfer of knowledge and research results to society (industry, politics, public) is especially important for technical universities such as the RWTH Aachen. It should be an integral part of strategic public relations and academic education. It is crucial that students develop the ability of knowledge transfer and know about differentiated instruments and measurements for the presentation of knowledge to various target groups. There is a lack of practical courses in which teachers and students learn how to teach central skills such as the transfer of knowledge and the transfer of scientific topics for different target groups.

One important target group are scholars—pre-university students. On the one hand, they represent an important source of the rising generation of engineers; they are also the future social decision-makers. Scholars should be led to science and technology in order to awaken their interest for technical professions. Scholars not only gain information through teachers and media: important sources for scholars to shape their opinions are the articles of other scholars at the same age, for example in school newspapers. The subject of this profile is

a project at the RWTH Aachen, which aims at new forms of knowledge transfer between university and school. The motto is: "Scholars Write for Scholars about Technology." They are accompanied and guided by various groups (researchers, teachers, and students of the university as well as teachers in schools). The learning places are different as well. One part of the project takes part at the university, another part at the schools. University teachers and students as well as teachers in their schools are competent contacts for them. The concept is that the transfer of knowledge goes from university to the schools.

The TiK project was initiated, developed, and carried out by the Department of Textlinguistics and Technical Communication of the RWTH Aachen in cooperation with the press office of the university. The department coordinates an interdisciplinary study course—technical writing. It combines systematically two subjects: one engineering subject, such as mechanical engineering or electrical engineering, and communication studies. The intent is to train specialists for the transfer of technology. The basic idea of the project is to integrate popular science writing into university and school studies in two ways. Students learn how to write popular science texts and at the same time learn to transfer their knowledge to others.

A basic aim of the project is to awaken interest for technical research by students, scholars, and teachers. In the centre of the project is writing about technology and basic skills such as research, phrasing, and revising. The project contains several measurements (seminars, workshops, building of networks etc.), which provide students, scholars (14-19 year olds of all schools), and teachers with the ability to convey knowledge in a popular-science way and sensitize them and awaken their interest for natural and engineering science. Another aim of the project is to make public the innovations, academic plans, and research results of the RWTH Aachen nationwide.

DESCRIPTION OF THE "TECHNIK IM KLARTEXT" PROJECT

With the "TiK" project the RWTH had successfully pursued new methods to convey teaching contents. The Department for Textlinguistics and Technical Communication developed the idea and the concept. The project was realized in cooperation with the press office of the RWTH and school newspapers from various German schools. All in all, 800 schools took part in the project. The rector of the RWTH financed it. The project was supported by an advisory board, which contains students, upper school scholars, teachers, subject teachers, and local journalists. The advisory board guided—among other things—the school

newspapers and contributed considerably to the conception of the scholar/teacher workshops. The concept was realized for the first time in 2002-2003. The first phase included writing workshops and layout-seminars for technical communication students; in the second phase, writing workshops and layout-seminars for scholars and teachers. In agreement with and with support by the "Lehrerbildungszentrum" of the RWTH, the teachers were trained.

The project is based on various components. The first component combines innovative teaching forms (project-based learning) with new information- and communication offerings addressed to students. Usually the course includes four credit hours per week. In academic courses the participants have the opportunity to learn about the basics of popular science writing, which they have to use in a realistic context. The topics arise out of the research environment of the university. Every department with interesting research projects may apply. The project leader collects the suggested topics and the students decide which project and department they want to write about. They start research about their topic and have the opportunity to contact the researchers to gain material for their articles, to interview them, to visit laboratories, and to observe experiments. Their task is to prepare the collected material for writing a popular science article. The produced articles will be collected in a database for school newspaper editorials.

The young journalists from the participating schools have access to a web-based platform and may use the texts as basic material for their own texts. The database concept derives from the idea of news agencies; the platform offers relevant and current information about research and teaching in nature and engineering science—from news about innovative developments to current research projects and perspectives on various occupational areas. The knowledge transfer is supported by a second format: a newsletter, which is made by students under the guidance of teachers from the department and of journalists from the RWTH press office. The RWTH Aachen was the first German university to provide nationwide school newspaper editorials every semester with information about research.

The second component aggregates the academic and scholastic training in interactive forms. It includes several day-lasting events, where scholars and teachers learn the basics of popular science writing and layout design for school newspapers. The third component integrates experience-driven offerings: scholars have the opportunity to visit test beds, factories, and laboratories as extraordinary teaching spaces.

In the following sections of the profile, some chosen measurements of the project will be introduced, as well as distinctive attributes of teaching and learning forms.

DISTINCTIVE ATTRIBUTES OF THE ACADEMIC TEACHING AND LEARNING CONCEPT

The course "Popularisieren: Schreiben in Medien und Öffentlichkeit" [Popularising: Writing for Media and Public] has four credit hours per week and additionally a three-day-seminar. The course had been offered for four years in both summer and winter terms. The maximum number of participants was 30 students. The course was led by a teacher from the Department for Text-linguistics and Technical Communication and by the head of the press office. One part of the learning process results from frontal teaching. It was complemented by numerous working sessions of the students' project groups. There is a huge work involvement by all participants, because the innovative design of the course requires intensive cooperation. The students are mainly motivated by the possibility to transfer the learned theory into practice and to gain vocationally-orientated qualifications during their studies.

PROJECT-BASED LEARNING

Project work in this context means a long-term and complex examination within the curricular course. It is a dynamic combination of theory and practice. In the sense of experienced learning (Gudjons, 1997; Apel & Knoll, 2001) an academic course should combine theory and practice as equal and mutual elements. The project-based dealing with the topic requires interdisciplinary consultations and cooperation. The course participants come from various disciplines of humanities, nature, and engineering science. The task of the course participants is to process engineering subjects and humanities research through genuine scientific methods and measurements. This includes the reception of theory and writing of diverse texts as well as creating a layout and the allocation of keywords in the database.

The content of the project, which focuses on "establishing a news agency by students for scholars," is based on the idea that students write for school newspapers. The focus of this reality-based situation is the use of knowledge resources (public relations, phrasing, editing, etc.), which—in conjunction with other activities (such as public relations, event preparation and implementation, supervision of writing workshops, etc.) —forms a specifically engineered action system. The basis for practical work in the real-life situation is the development of theoretical knowledge in science journalism and public relations. During the seminar the following areas are covered:

- Goals/ Strategies and features/ techniques of popular science writing (see Niederhauser, 1997, 1998, 1999)

- Analysis of popular science texts as compared to scientific texts
- Instruments and measures of public relations (Faulstich, 1992)
- Techniques/methods of information gathering and processing systems (Haller, 2001)
- Writing theory and writing strategies (see Jakobs, 1997, 1999a, 2009; Molitor, 1985; Perrin, 1997, 1998)

Theoretical knowledge is applied in practical work: Participants write short and long versions of research on the subject. They learn to deal intensively with their texts to make changes in perspective and to give each other specific feedback. Students reflect together on their progress and the results of their work. The role of teachers is to be informative, advisory, supportive, and encouraging.

Intensive Seminar with Accompanying Tutorials

The intensive seminar is based on team-teaching (lecturers, tutors, students). The project-themes about which the students want to write are specified and the project teams created. The students' project teams plan workflow. They determine simultaneously both the individual areas of responsibility of team members, as well as share learning processes such as different forms of collaborative writing (see Bleich ,1995; Jakobs, 1997; Lean, 1999; Sharples, 1999; Schindler, 2007). Contents of the intensive seminar are theory and teaching of writing strategies, as well as training and flexibility through techniques (Molitor, 1985; Jakobs, 1999; Perrin, Böttcher, & Kruse, 2003). A major challenge is the border between factual accuracy and entertainment value of the journalistic text. They learn to deal with discipline-specific discourse patterns as well as with conflicts.

The main aim of the intensive seminar is to revise the articles for the newsletter. The text revising takes place as simulated editorial meetings. The course participants discuss the draft texts by using predetermined objective criteria. The group discussion is held at eye level. Everyone will be taken seriously. In addition, there is a tutorial for writing for the Internet. The students deal with the specifics of web formats, and practice by using given materials.

Combination of Teaching and Public Relations

A special feature of the project is the substantive and personal link between teaching and public relations. The strong involvement of the press office and their staff gives the seminar authenticity and practical relevance. The students learn about working practices of journalism and get professional ad-

vice and feedback. The students can also take advantage of the strong contact network of public relations. Conversely, the press benefits from the perspective of students and the challenge of adapting discussion of journalistic writing to the target group scholars. Important impulses arise from the confrontation between theory and practice. In the journalist's contact with the students, experienced processes of research and journalistic text production, as well as the setting of target values and criteria, must be questioned. The task to develop writing workshops with students and teachers for scholars and their teachers, as well as discussing the themes, research, and text products, leads to intense discussions and a repeated change of perspectives. Current topics of the younger generation will find—stronger than before—the entrance to public relations. Critical feedback from seminar participants means that instruments and measures of public relations are considered and analyzed—for the public relations work of the university, this is a valuable form of evaluation.

Moreover, the press office can cover many results of student research and text production. The university is nationally visible through the newsletter. A secondary effect of the publications through media about the project is the resultant inquiries from interested schools and institutions.

PROJECT EVENTS: CONGRESS FOR SCHOLARS, WITH WORKSHOPS

In November 2001, the first TIK congress for scholars was held: scholars from all over North Rhine-Westphalia took part in four day-long writing workshops in which practical tips for work were offered to school newspapers. The results of the writing workshops were put together in a conference newspaper. In small groups, specific issues for school newspapers were discussed, for example, writing, illustrating, and web-design.

WRITING WORKSHOPS

The TiK writing workshops give young editors the possibility to practice journalistic writing about scientific topics. The scholars are introduced to science-teaching strategies and techniques of research. In a subsequent research phase in a research institute of the RWTH Aachen, scholars can visit projects to experience and learn science in a personal discussion with scientists. For most scholars this is the first opportunity to look at a university from the inside. The personal contact breaks down barriers and helps to break down clichés about science and the work of scientists.

After visiting the departments, the writing phase begins. In order to initiate the process of writing, the scholars test methods of creative writing (Böttcher, 1999a, 1999b; Böttcher & Czapla, 2002). The actual writing process occurs either alone or collaboratively. Each workshop ends with a text optimization phase. In small groups, participants receive constructive feedback. They use the notes for the final editing. The output of the seminar is not only new experiences and an increase in skills, but also a number of texts that are the subject of further processes and workshops.

LAYOUT WORKSHOPS

In TiK layout workshops, the participants learn to make their text products visually interesting. The design is based primarily on printed school newspapers. The workshops also address the needs of online newspapers and opportunities they offer. Graphic designers introduce the participants to the basics of professional layout design. During the workshop, not only young editors are addressed, but also their teachers, who work together with the students to learn innovative methods of design of school newspapers. The theoretical principles are put into practice with the help of exercises. The guidelines are applied to the layout of their own school newspapers. This part is especially valued. The participants receive a briefing on the use of various computer programs such as "Adobe Photoshop" or "InDesign." In small groups, their own ideas can be creatively implemented on a computer. All workshops are evaluated and the results are recorded in a report. The evaluations are used iteratively for optimization of teaching and learning forms and other aspects of information and knowledge.

REFLECTION ON THE PROJECT

The long-term project approach results in a heterogeneous stock. The project's content and method are as extraordinarily successful as its inner and external impact. Negative outcomes include the high costs in time, people, and finances, as well as the fluctuation of the scientific staff and personnel.

ACHIEVEMENTS AND POSITIVE FEEDBACK

The response to the project has been very positive. This is shown by external and internal evaluations, such as evaluations of university teaching by students, resonance analysis in schools, and the evaluation of the project by

Stifterverband, the business community's innovation agency for the German science system.

The project shows that by working closely with young editors, a long-term commitment arises: interesting contributions generate curiosity, interest, and possibly a desire for further information—in some cases to study a science or engineering discipline. Interest and information are augmented by the personal approach and the continuous emotional contact. Young people who are interested in public relations or in science journalism are specifically encouraged. Some former scholarly editors have decided on the basis of the TIK-project to study at the RWTH Aachen. By training the target groups, there are also multiplier effects: the interest in technology will be transported via school newspapers and spread in the schools.

From winter term 2001/02 to winter term 2004/05, over 180 students successfully completed the project course: "Popularisieren: Schreiben in Medien und Öffentlichkeit." As noted in course evaluations, the students especially appreciated the motivational content of the course, the opportunity to practice interactive forms of learning within the team, and the close relation between the theoretical and scientific education and practical relevance.

The commitment of the students was higher than the average. The registration numbers for each course were more than 100 applicants. The commitment was above the planned six hours per week. The students volunteered extensively to support the organization of the student congress by teams who occupied the conference office and participated in the preparation of the conference sessions, workshops, etc. Some course participants have managed to write a script for a short film about TiK and to design a radio program, from manuscript to on-air production. A student group was engaged in sponsorship, another has written a play about TiK and presented it. Since winter term 2003/04, students took over two sponsorships of newspapers at regional schools. Another volunteer activity was that experienced students conducted advice sessions with new students.

The results of the research and interviews of students in the RWTH institutes were excellent. Overall, the text corpus includes 250 target group specific texts in short-and long version (newsletter and database). The response from the school newspapers is extremely positive. The project convinced the business community's innovation agency for the German science system: TiK was established in 2001 as one of 12 outstanding actions nationwide with extraordinary marketing efforts and awarded financial support.

The text products as well as the response show that the cooperation has been successful on both sides, as well as the learning process for students.

PROBLEMS AND CONSTRAINTS

The negative outcome begins with the framework for sustainability and continuity of the project work. It refers to the heavy workload and the flow of information from the schools into the project, as well as the institutional conditions in universities. The personnel fluctuation for the school newspapers is high; the constant change leads to social difficulties and the need for ongoing reconciliation and thus intensive contact. Most documents are sent with a considerable time lag. Specific measures have helped to reduce these confounding factors: the platform has been made significantly more service oriented. Twinning arrangements between students and school newspapers allow the maintenance of personal contacts.

Academic teaching requires a high level of personal effort of teachers, who are exchanged by temporary contracts. Personnel change always means a loss of knowledge and networks. On the part of the university, the high level of preparation, implementation, and follow-up effort for such holistic teaching and learning is often underestimated: successful project implementation requires substantial financial, time, and personnel resources. The university supported the project with an initial funding of approximately €10,000 over two years; achievements of the Institute and the press office were added. Despite the positive evaluation of all project partners the funding ended in 2005. Overall, the project ultimately foundered on personnel and financial resources. The latter is especially important in times where competition among higher education programs determines the daily work routine. If the payment is oriented on graduate numbers, funding, and scientific publications, there is no room for a volunteer commitment.

CONCLUSION AND OUTLOOK

Currently we are working at the Department for Textlinguistics and Technical Communication to take up the project idea again in a changed configuration. The main innovation is a broad national orientation and financial security of measurements. In the future, the project will rely on a network of stakeholders from business, universities, and schools. The learning places should become more diverse. The range of topics will be broader. The themes will come from industry and research. Other changes relate to the methods of media preparation and writing for various communication channels. The technological development shows that printed school newspapers represent only one of many

different media variants. All in all, we are convinced that the idea is a very interesting approach to teach text production skills. Added values are created by the combination of innovative learning environments and themes, the connection between theory and practice and the diversity of persons involved. Therefore, we continue: the seminar "Popularisieren: Schreiben in Medien und Öffentlichkeit" was offered again in summer 2010 by the Department for Textlinguistics and Technical Communication in cooperation with the press office of the RWTH Aachen, with the aim to develop the concept further.

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