

Writing in German as a foreign language: the impact of computer use on revision behaviour

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Abstract

The nature of writing and its interaction with the other language skills are examined, and approaches to teaching writing are presented. The use of word processing in the writing process is reviewed, and the positive and negative effects of word processing on writing are outlined. A study which was carried out to examine the impact of computer use on revision behaviour is described, and its findings are discussed. Recommendations are made regarding the use of word processing in the writing curriculum.

Introduction

The research presented in this article was carried out in 1995 and 1996 at an Irish Institute of Technology as part of a larger study designed to examine the effects of computer use on students' attitudes and revision behaviour and on the final product when writing in German as a foreign language. The present article focuses on the research and findings in relation to revision behaviour.

The nature of writing

Writing is generally considered to be the most difficult and complex activity in language learning. The factors that contribute to making it both different and complex also make it an extremely effective means of language learning.

When using any human language the oral aspects of communication always seem to be easier and more 'natural' than writing activities. In the writing process, a deeper and more detailed treatment of the subject matter is required, which can be attributed to the psychological complexity of the process. Writing requires abilities which are, in part, independent of those required for other skills. This is why writing is considered to be the most complicated and difficult language activity.

Hermanns (1984: 222-223) describes what happens in the process of writing. Referring to Kleist's description of the purpose of writing as the 'allmähliche Verfertigung der Gedanken' ['gradual production of thoughts' – *ed.*], he continues:

Findet sie – in der Fremdsprache – statt, so ist das Schreiben jedoch ein außerordentliches, ein privilegiertes Medium nicht nur des sprachlichen Ausdrucks, sondern auch des Spracherwerbs. Schreibend vergewissere ich mich meiner Gedanken und damit auch meiner Sprache. Schreibend entwickle und finde ich mit meinen Gedanken auch die sprachlichen Formen zu ihrem Ausdruck. Die zeitlu-
penartige Verlangsamung des Formulierens beim Schreiben – im Vergleich zum Sprechen – bedeutet Intensivierung, auch lernpsychologisch. Habe ich eine passende Formulierung gefunden, habe ich mich für eine Formulierung entschieden, so jagt sie vier-, fünf-, siebenmal oder öfter durch mein Kurzzeitgedächtnis, bis sie endlich auf dem Papier steht, so lange dauert eben der mechanische Vorgang des Niederschreibens. Doch dabei prägt sie sich mir ein, dabei geht sie in mein Langzeitgedächtnis über.¹

Phinney (1989: 81), in a review of literature in the area of ESL, observes that the writing process is not linear, that it is a discovery process of finding out what the writer wants to say, and that it is recursive. Unskilled writers tend to focus on surface editing rather than structural revisions; they will edit more locally

¹ When it takes place in the foreign language, then writing is, however, an extraordinary, a privileged medium, not only of written expression, but also of language acquisition. In writing I confirm my thoughts, and also the written forms for their expression. In writing I also develop and express my inner thoughts in linguistic forms. The way in which formulation during writing takes place in slow motion – compared to speech – means intensification, also in terms of the psychology of learning. When I have found a suitable wording, when I have decided on a wording, then it races through my short-term memory four times, five times, seven times or more, until it is finally on paper, for that is how long the mechanical act of writing it down takes. And through this process it impresses itself on me, through this process it turns into my long-term memory. [– *ed.*]

and more readily than will experienced writers, who view the text as mutable and fluid.

Writing, therefore, is a difficult task, so complex mental processes are required in order to produce a piece of writing. The writer learns more and better due to the complexity of the mental processes and the intensity of the experience. Since it is more difficult to write in a foreign language, the process is even more intense, and it contributes greatly to learning.

Approaches to teaching writing

Post-communicative approaches point to the importance of writing as a 'process', and they associate writing with *Wissenszuwachs* or 'the increase of knowledge' (Hipfl-Woi 1994: 105). Daiute (1985: 65) describes the process approach to writing as 'a multistep approach that involves discovering ideas as we think and even as we write'. In Daiute's (1985) approach to writing, errors are not seen as mistakes to be corrected, but as 'signposts of the evolving text and the writer's abilities' (p. 65). Daiute (1985: 65) also notes research showing that approaching writing as a discovery process frees writers from the feeling that they have to do everything at one and also frees them to experiment.

The process approach to writing involves different stages of prewriting, composing, and revising. While most authors divide the process into these three stages, and differentiate between 'deep-level' and 'surface-level' revision, some authors distinguish between revision and editing, with the latter forming the last stage of the process. Pre-writing activities include deciding what to say and making notes. Composing involves translating these ideas into a sequential text. Revision involves making changes in ideas, organization, and expression. Editing is defined as the process of refining wording, spelling, usage, and punctuation, otherwise referred to as 'surface-level' changes.

Hermanns (1984: 222) believes that students learn to write in a foreign language if they have the possibility of expressing themselves spontaneously within a *Rahmenthema* ('general theme'). Hermanns (1984: 223) advocates *das freie Schreiben* ('free writing') rather than what he terms *das pragmatisch-gebundene Schreiben* ('pragmatically-restricted writing').

Cooper (1988: 167) maintains that if writing as a process is to be used in German as a foreign language, the teacher must allow

learners to experience the entire writing process by guiding the class through all its stages. The teacher should insist on clear expression in terms of both form and content, while keeping in mind that form and correctness in written expression can only be judged in relation to meaning and to the message the writer seeks to convey.

As regards avoidance and correction of mistakes, there is general agreement in the relevant research literature that students should be encouraged to write without feeling inhibited by the fear of making mistakes (e.g. Hermanns 1984: 229 and Cooper 1988: 71). Cooper (1988) believes that the teacher should always make it clear to the students, before the composing phase, that changes and revisions are a natural part of writing, and that they should not try to get everything right straight away.

Higgins and Johns (1984: 84) claim that it is fairly rare for foreign language learners to be trained in the skill of re-drafting, or even to realize that it is relevant to what they do. If the teacher collects the written work and corrects all the errors, implicitly the students are being trained to submit their first effort as the final version, and to take no responsibility for identifying and correcting their own errors.

Phinney (1989: 83) expresses the belief that both students and teachers benefit from a process approach to writing that is content-based, with less emphasis on rules for writing, and more emphasis on writing for meaning.

A review of the literature on current approaches to writing points to a broad acceptance of the principles of the process approach. However, by over-emphasizing the 'process' aspect, we run the danger of reverting to the traditional *Aufsatz* or essay type of productive writing. An effective way of avoiding this potential pitfall may lie in the choice of *Rahmenthema*, which, while offering the possibility of 'free' writing, nevertheless focuses students' attention on topics which are meaningful in the context of their overall education.

Positive and negative effects of word processing

Results of studies on the impact of the word processor on revision behaviour are overwhelmingly positive. It facilitates revision and editing, and eliminates the need to recopy. It allows for more

flexibility in alteration, change, correction, revision and expansion. The word processor encourages a greater number and type of revisions, as well as more discourse-level or meaning-related revision (Phinney 1989: 83, Snyder 1993: 55, Pennington 1996: 126). The word processor facilitates the recursive and idiosyncratic nature of writing, and there is the potential for reorganization of text and for rethinking; it therefore invites revision. With pen and paper, the process is more linear (Snyder 1993: 54). By reducing the burdens of manual cutting, pasting, and recopying, the computer encourages students to act more like experienced writers, who revise extensively (Daiute 1985: 37).

However, some studies have confirmed that students do not generally take advantage of the computer's capabilities for revision. Inexperienced writers, whether writing in their first or second language, tend to have the most trouble with this aspect of the writing process. They often focus on surface changes, editing rather than revising, or rewrite a text entirely without reference to earlier drafts. Phinney (1989: 84) concludes from this that writing on a computer poses two problems: dealing with a new technology and at the same time trying to do something which requires special skills.

Phinney (1989: 84) also reports that even when teachers emphasize the computer's facilities for revision, students more often use the computer for microrevision than macrorevision. Although basic writers can certainly be taught techniques to help them invent and revise extensively, using a computer alone does not seem to stimulate different revision behaviour, although students may produce more drafts.

Some studies indicate that it seems to take a long time for real revision, i.e., major changes which deal with the meaning of the text, to occur. It seems that some students find it difficult to move beyond obsessive editing and concern about the surface features of the text (Snyder 1993: 55).

Significant differences exist between revising with a hard copy and revising electronically, which may push the writer towards one type of revision. With a hard copy, whether printed, typed, or handwritten, the entire text is available to the writer; on a computer, a page or less is displayed at any given time. This may in fact lead to focusing on minor changes (Phinney 1989: 85).

Research methodology

Objective

The research described in this article was designed to examine the effects of computer use on students' revision behaviour when writing in German as a foreign language.

Subjects

The group chosen for this study was as homogeneous as possible in terms of German language and computer-related learning experiences, motivation, and attitude to language learning. This group was then divided into two sub-groups of six students each: a control group (also referred to in the study as Group A), who would use pen and paper to carry out the writing assignments in the study, and an experimental group (also referred to as Group B), whose members would complete the writing tasks using word-processing software. Both groups included a mixture of weaker and stronger students.

All the students participating in the study were already familiar with the layout and functions of the word-processing package used in the study, Microsoft Word, from previous use of the English version. Before the study began, the members of the computer group had two one-hour sessions to introduce them to the German version of Microsoft Word, and to allow them to practise using the German keyboard layout.

While the software also includes a spell-check and a thesaurus, students in Group B were asked not to use these features, in order to maintain comparability between the two groups.

Writing tasks

Since the students in question were following a commercially-oriented course of study, with the German language as the main component, it seemed appropriate to adopt an interdisciplinary approach. Topics were therefore selected from the students' other subject areas, and were as follows: *Topic 1*: Die Werbung – Freund oder Feind?, *Topic 2*: Die Europäische Union: Vergangenheit, Gegenwart und Zukunft, and *Topic 3*: Die Computer-Revolution.² Each of the three topics was worked on over a period of two

² I.e., (1) Advertising – friend or foe?, (2) The European Union: Past, present and future, and (3) The computer revolution. [– ed.]

weeks, with one hour per week devoted to writing activity. The total writing time was therefore six hours, two per topic.

The process approach to writing was used throughout this study (cf. Appendix). The type of writing undertaken in this study was free writing, where students generated, organized, and expressed their own ideas, in their own sentences.

Data collection techniques

At the beginning of the study, students' approach to writing was assessed in a self-administered attitude questionnaire. A controlled comparative study was then carried out to assess revision behaviour, including both amount and type of revisions. Revisions were considered to be either surface-level (minor additions, deletions, and substitutions) or deep-level (major additions, deletions, substitutions, and reorganization of text). Revision behaviour was assessed by means of observation during writing sessions, and by a comparative analysis of the first and second drafts produced by both groups.

Preparation

A process approach was followed in the writing sessions (cf. Appendix). In the first stage, students were encouraged to explore ideas by pre-writing, and to do 'free writing' with minimum guidance. Little attention was paid at this stage to organization of ideas. Students were asked questions designed to help them clarify ideas and generate new ideas, and reminded to consider audience and purpose. In the later stages, students were asked to concentrate on organization of ideas and their logical progression, and on smooth transitions between ideas. They were also asked to work on developing introductions and conclusions.

Research findings

Pre-study questionnaire

The pre-study questionnaire set out to obtain an overall picture of students' writing behaviour in terms of composition and revision, so that any changes in the course of the study could be easily identified.

Students were first asked to indicate what they would normally do before beginning to write on a topic in German. Since this questionnaire was administered at the beginning of the study, and none of the students had previously used a word-processing package for writing in German, the comments on writing behaviour in this section relate to writing in German with pen and paper only.

The results revealed a vast variation of writing behaviour, with no particular pattern emerging as to what students do when approaching a writing topic in German. While 33% indicated that they usually begin to write immediately, 42% claimed that they never do so. Among the most significant findings were the following: 42% indicated that they never prepare a structure or outline, 58% stated that they never define the topic, and 50% replied that they never consult sources of information on the topic. If a pattern can be identified at all it would appear that students do not, in general, devote much time to preparation, and that writing seems to be largely a rather spontaneous undertaking.

Students were also asked at the beginning of the study what they are likely to do when they have finished writing a text. Responses here were once again very varied. The picture that emerged is that most students (75%) usually re-read the text and 50% usually make minor changes in spelling and vocabulary. It is unusual for students to make major changes (adding, deleting, or moving sentences or paragraphs), although 50% state that they sometimes do so, and 50% that they never do so. A substantial majority (67%) would never rewrite a text before submitting it.

Observation

In the course of the study, students' revision behaviour was observed. As each writing topic had been explored in pre-writing sessions, students had made notes, written down ideas, and been given background material in German, which they subsequently referred to in the writing sessions.

There was a difference between both groups regarding the use made of previous notes. The 'pen and paper' group used the hand-written notes for reference, and almost immediately began to write their text. Most students appeared to have ordered their notes mentally before they began to write, as there was no evidence on paper of a pre-planned structure. In contrast, four out of six

students in the computer group typed in the notes exactly as they had them in handwritten form, i.e. in random order, and then began to expand on each point, without re-ordering them. The remaining two students in the computer group proceeded just as the pen and paper group did, by placing a 'mental' order on the notes they had made, and developing them in that order.

This meant that all members of the 'pen and paper' group, and 33% of the computer group, began to organize their ideas in the early stages of composition, even though they were encouraged to concentrate on generating, exploring, and developing ideas before focusing on organization. These students also produced longer texts in the first session, but were less productive in the second session.

The students in Group B consulted with each other and with the teacher quite frequently during the composition process. This meant that they made quite a few revisions as the text was being created, and these were not evident when the drafts were compared. The typewritten drafts only provide a comparison between the texts as they are at two particular points in time.

The students in Group A consulted less with each other and with the teacher during the writing process, and did much less revision while they were composing. Since the texts were written by hand, and corrections were visible on paper, it was easier to see the overall amount of revision done by this group.

Comparison of first and second drafts

The drafts produced in the first session on each topic were compared with the second or final version. In order to identify the patterns that emerged in the course of the study, each of the three writing topics are first dealt with separately and are then brought together to give an overall picture of the differences in revision behaviour between the two groups.

Analysis by topic

Topic 1 (Weeks 1 and 2): A comparison of the two groups indicates that Group A made more revisions than Group B, but these were surface-level revisions only. Group B made hardly any revisions, and this was probably due to lack of time. They had generated far less content in the first session, and used the second

session to add material to the text, leaving them with little or no time to revise.

Topic 2 (Weeks 3 and 4): On this particular topic, extensive deep-level revisions were made by both groups. While these were mainly additions in the case of Group A, Group B revisions involved both additions and reorganization of text. The amount of text generated by Group B in the first session was roughly the same as that of Group A, but was less in the second session.

Topic 3 (Weeks 5 and 6): The greatest difference in revision behaviour between the two groups was evident on this topic. While the control group concentrated on surface-level revisions, there was evidence that the computer group made more substantial changes involving the movement of text.

Analysis by group

Group A made a small number of minor changes on the first topic. They revised substantially with numerous additions to the texts on the second topic, prepared in the second two weeks of the study. On the third topic, in the final two weeks of the study, they made more changes than on the first topic, and less than on the second one. These were surface-level changes, mainly substitutions in vocabulary.

All members of this group had quite an amount of time left for revision on Topics 1 and 3, but only in the case of Topic 2, when they had less time, did they carry out deep-level revisions, such as major additions and reorganization. Therefore, in the case of this group, there was no relationship between the time available to make revisions and the actual number of revisions made.

This group seemed to have their texts 'mentally' structured as soon as they began to write. This is perhaps the reason why they did not consider it necessary to make any major reorganizational changes at a later stage.

Group B did very little revision of any kind on the first topic, where they also produced very little text in comparison to the control group. On the second topic, it was clear that students had approached the topic differently in the second session, and the drafts were barely comparable due to the substantial amount of revision involving both major additions throughout the text and reorganization of text. The drafts of the final topic indicated that the students in the computer group had made a number of deep-

level changes involving reorganization of text. The students in this group composed more slowly on the keyboard than they would have written by hand. They therefore used most of the time available for generating text, and had less time for revision.

This group spent more time inputting notes, headings, and keywords at the beginning of the first session on each topic, so they did not start writing text as promptly as the control group. This meant that they used most of the second topic session for generating text according to the headings, and this is another reason why they had less time in the later stages for revision and organization.

Group B spent more time consulting with each other and made more revisions as they composed. This also made the composition process somewhat slower, but meant that texts required fewer surface-level changes in the later stages.

The greatest difference in revision behaviour was on the last topic, where this group made more major, deep-level changes. This seems to indicate that the group were making better use of the computer's capabilities. One can only speculate that if students in Group B had had more time to work on their texts until they were fully satisfied with the final product, they might have revised to a greater extent.

Discussion of findings

Overall evaluation of findings

While the findings of the study are not totally conclusive, the computer group made more deep-level revisions in the course of the study and this, in itself, can be said to be indicative of positive development. It must be borne in mind that this is an exploratory study, carried out over a relatively short period of time and with a limited number of writing tasks. It must also be remembered that when writing or using a computer, or doing both, we are talking about developing skills. As Pennington (1996a: 130) points out, a skill is acquired over time, and therefore short-term results are not necessarily either wholly positive or predictive of ultimate achievement. Therefore, the encouraging trends shown in the study are not, in themselves, an indication of ultimate learner achievement.

Findings in context

This section will outline the various findings of the study and examine them in relation to the literature.

The computer group found that one of the greatest advantages of the computer was that it was easier to correct mistakes. One third of the group found writing with the computer less difficult than by hand, because of the ease of making changes. They made fewer surface-level revisions, but more deep-level revisions, than the pen and paper group, particularly in terms of organization. Results of studies on the impact of the word processor on revision are overwhelmingly positive. It encourages a greater number of revisions and types of revision, as well as more discourse-level or meaning-related revision (Phinney 1989: 83, Snyder 1993: 55, Pennington 1995: 126).

The nature of the topic was seen to influence the composition and revision process of both groups. The more difficult topic forced all students to make more substantial revisions to their texts. It is therefore clear that, in such circumstances, the computer is of most value, since such revisions can be carried out easily. The impact of the writing topic on composition and revision behaviour is not referred to in the literature on word processing, and most of the studies do not indicate either the title or the nature of the topics.

The difference between the revision behaviour of both groups was most striking on the final topic, when the computer group made more deep-level changes (such as substantial additions throughout the text) and carried out more reorganization. This indicated that they were gradually making better use of the computer's editing capabilities. This is reinforced by the results of studies which indicate that it takes a long time for real revision to occur. Students need time to get used to the computer's capabilities, and many students find it difficult to move beyond obsessive editing and concern about the surface features of the text (Snyder 1993: 55).

One of the main advantages of the computer which students recognized was that it is more easily possible to change one's mind as one writes, and go back and change what has already been written. This encourages a much more recursive type of composition behaviour. It is recognized in many studies that the word

processor facilitates the recursive and idiosyncratic nature of writing (e.g. Snyder 1993: 54).

The computer group did not start writing as promptly, but inputted notes from pre-writing sessions in random order, expanded on them, and reorganized them at a later stage. The computer group therefore showed different and more flexible composing behaviour relative to the pen and paper group. It is generally acknowledged that using the word processor leads to a more flexible writing process (Pennington 1996: 126).

Recommendations

The following suggestions are based on the findings of the study and should help to ensure optimum use of text processing software for the development of revision skills.

Although students may be aware of the capabilities of the computer, in practice they do not make full use of the options available, particularly those which can be used to make major changes to a text. It is therefore recommended that, before advancing to free writing, various types of text manipulation exercises should be used to encourage students to make use of the program's capabilities.

Despite previous experience of word processing programs, the greatest obstacle for most students is their level of keyboard skills. Poor keyboard skills interfere with spontaneous and fluent production of language, and slower composition leaves less time for meaningful revision. One simple rule can be applied: if students can write as quickly, or more quickly, with the computer than by hand, then their keyboard skills are adequate.

The time allowed for completion of writing tasks should not be an important factor in the early stages. Students tend to compose more slowly and need longer to complete the various stages of the process. They should be given the opportunity to work on topics until they are satisfied with their written product.

The findings of the study demonstrate that even when learners are encouraged to experiment with language and focus on expressing ideas, they tend to be very aware of accuracy, and devote most of their revision time to corrections of spelling and grammar. In order to bring about a change in students' approach to writing, the teacher should repeatedly remind students that the focus is on

generation, development, and organization of ideas. What they are writing on the computer can easily be changed and corrected at a later stage, so they can gradually become more enterprising and adventurous in their composition behaviour.

It is unrealistic to expect word-processing technology alone to bring about a change in writing behaviour. In order to be successful, it must be accompanied by a teaching approach which encourages students to read their texts critically and revise them.

In order for the students' approach to writing to change, the teacher's approach must also change. The teacher must be prepared to stand back and let the students experiment and make mistakes, and should only intervene during the drafting and revision process to assist in developing and refining ideas.

Finally, it should be noted that choice of topic is important. While it is important to choose topics which students can relate to a certain extent to their own experience and knowledge, topics which are based substantially on students' own experience do not lead students to work on finding ideas and exploring new areas. The process approach to writing, accompanied by the use of the computer, lends itself particularly well to topics which students find more difficult or challenging. When dealing with such topics, in their search for ideas, and their development of them, they are forced to think, reorganize, and make many decisions about what they are creating.

Appendix

Instructional protocol for a process approach to computer-assisted composition (Pennington and Brock 1992: 106-107).

For subjects using a process approach, the tutor:

Will	Will not
Engage in pre-writing exploration of ideas, i.e. 'talking out' ideas	Correct punctuation, spelling, grammar
Encourage 'free writing'	Correct fragments or run-ons
Ask questions that help to generate and refine ideas	Require action verbs, delete be verbs, expunge passives
Ask about focus, audience and purpose	Require variety in sentence length
Ask students to 'nutshell' ideas and purpose	Correct case usage or subject-verb agreement
Work on organisation of ideas	Combine sentences
Ask students about logical progression of ideas	Cross out instances of wordiness or repetition
Ask questions about word choice (only) if meaning is unclear	Correct or suggest idioms
Discuss introductions and conclusions	Fix mixed metaphors or non-parallel constructions
Work on coherence of ideas and transition between ideas in a general way	Place misplaced modifiers
* The key is to always encourage the subjects to use the computer to insert, delete, and move ideas. The focus is on using the computer to generate, organise, and refine ideas. The emphasis is thus on the process of writing used to generate, organise and refine ideas.	Correct tense or person shift
	* Correct any matters of mechanics or style that do not obscure meaning. Sentence-level problems are not considered important unless they confuse or obstruct meaning. When asked about these kinds of problems, the tutor will ask, 'What do you think is best?'.

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