

L1 use during L2 writing: An empirical study of a complex phenomenon

Daphne van Weijen^{a,*}, Huub van den Bergh^{a,b}, Gert Rijlaarsdam^b, Ted Sanders^a

^a *Utrecht Institute of Linguistics (UiL-OTS), Utrecht University, Trans 10, 3512 JK Utrecht, The Netherlands*

^b *Graduate School of Teaching and Learning (ILO), University of Amsterdam, Spinozastraat 55, 1018 HJ Amsterdam, The Netherlands*

Abstract

This study examined writers' use of their first language (L1) while writing in their second language (L2). Twenty students each wrote four short argumentative essays in their L1 (Dutch) and four in their L2 (English) under think-aloud conditions. We analysed whether L1 use varied between writers and tasks, and whether it was related to general writing proficiency, L2 proficiency, and L2 text quality. The analysis focused on the occurrence of a number of conceptual activities, including Generating ideas, Planning, and Metacomments. Results indicate that all participants used their L1 while writing in their L2 to some extent, although this varied among conceptual activities. In addition, L2 proficiency was directly related to L2 text quality but was not related to the occurrence of conceptual activities either in L1 or L2. General writing proficiency, on the other hand, has a negative influence on L1 use during L2 writing and a positive effect on L2 use during L2 writing. L1 use during L2 writing is negatively related to L2 text quality, at least for Metacomments. Finally, L2 use appears to be positively related to L2 text quality for Goal setting, Generating ideas, and Structuring, but negatively related to L2 text quality for Self-instructions and Metacomments. The theoretical relevance of these findings is also discussed.

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Keywords: Cognitive activities; Conceptual activities; Generating ideas; Language switching; L1 use; L1 writing; L2 proficiency; L2 writing; Metacomments; Planning; Text quality; Writing process

Earlier L2 writing research has shown that L2 writers use their first language (L1) while writing in L2, although the extent to which they do so clearly varies (see for example, Friedlander, 1990; Krapels, 1990; Uzawa, 1996; Woodall, 2002). Studies to date have also found that adult writers use their L1 while writing in their L2 for a wide variety of purposes, such as *planning* (Beare, 2000; Jones & Tetroe, 1987; Krapels, 1990; Uzawa & Cumming, 1989; Wang, 2003; Woodall, 2002), *generating ideas or content* (Beare, 2000; Beare & Bourdages, 2007; Knutson, 2006; Krapels, 1990; Qi, 1998; Roca de Larios, Murphy, & Manchón, 1999; Uzawa & Cumming, 1989; Wang, 2003; Whalen & Ménard, 1995; Woodall, 2002), or *solving linguistic problems* such as vocabulary issues (Beare, 2000; Centeno-Cortés & Jiménez Jiménez, 2004; Cumming, 1989; Jones & Tetroe, 1987; Lay, 1982; Wang, 2003; Woodall, 2002). Furthermore, L1 use has also been reported for back-tracking (Manchón, Roca de Larios, & Murphy, 2000), stylistic choices (Knutson, 2006), and as a means to prevent cognitive overload (Cohen & Brooks-Carson, 2001; Knutson, 2006; Qi, 1998; Woodall, 2002).

* Corresponding author. Tel.: +31 30 2538131; fax: +31 30 2536000.

E-mail addresses: D.vanWeijen@uu.nl, d_vanweijen@hotmail.com (D. van Weijen), H.vandenBergh@uu.nl (H. van den Bergh), G.C.W.Rijlaarsdam@uva.nl (G. Rijlaarsdam), T.J.M.Sanders@uu.nl (T. Sanders).

Studies which reported on L1 use, such as those above, were carried out for a number of different reasons and with varying research goals. First of all, some studies focused on comparisons of L1 and L2 writing (e.g., Uzawa & Cumming, 1989; Whalen & Ménard, 1995) or on the extent to which writers transfer their L1 strategies to L2 writing (e.g., Wolfersberger, 2003). These studies see L1 use as a strategy which writers employ during L2 writing, mainly in the form of translating from L1 to L2. This view is also shared by other studies, which have focused on the influence of learner characteristics such as writing expertise and L2 proficiency on L2 writing (e.g., Cumming, 1989; Sasaki, 2002, 2004; Sasaki & Hirose, 1996). Second, several studies have included L1 use as an independent variable, for example by instructing participants to plan in their L1 or their L2 before writing their L2 texts (Akyel, 1994; Friedlander, 1990; Lally, 2000) or by instructing participants to write a text in their L1 and then translate it into their L2 (e.g., Cohen & Brooks-Carson, 2001; Kobayashi & Rinnert, 1992). Comparisons between the translation and direct writing (L2-only) conditions were complicated, however, by the fact that participants in the direct writing condition reported using their L1 very often while writing in their L2, even though they were not supposed to (Cohen & Brooks-Carson, 2001, p. 179; Kobayashi & Rinnert, 1992, p. 200).

Third, an increasing number of studies have focused specifically on the role L1 use plays during L2 writing. These range from small-scale case studies, which were mainly exploratory in nature (e.g., Knutson, 2006; Lay, 1982; Qi, 1998), to studies which attempted to determine how L1 use is related to specific writing activities, such as *generating ideas* (Beare & Bourdages, 2007), *backtracking* (Manchón et al., 2000), or *planning* (Jones & Tetroe, 1987). Finally, some studies investigated the effect of L2 proficiency on L1 use (e.g., Wang, 2003; Wang & Wen, 2002; Woodall, 2002). Some of these studies, however, were rather vague about what L1 use actually means and how it was measured. Lay (1982) for example, found more L1 use on certain topics than on others and reported that more L1 use resulted in better quality texts. But it is unclear what “more L1 use” actually means (see Lay, 1982, p. 406). Other studies were more precise and attempted to calculate to what extent L1 was used during writing in L2, by reporting the overall percentage of L1 words in L2 think-aloud protocols (Wang & Wen, 2002), the mean number of language switches per task (Wang, 2003; Woodall, 2002), and the length of time (number of seconds) that L1 use occurred during L2 writing (Woodall, 2002).

Despite their different research goals, many of the studies described above attempted to relate L1 use to either L2 proficiency or text quality in some way. However, not surprisingly, given their different goals, they have produced rather conflicting results. On the one hand, several studies reported that high proficiency writers switched more between their L1 and their L2 than low proficiency writers (see for example, Wang, 2003). In addition, Cumming (1989) concluded that expert writers used their L1 frequently during word searches. On the other hand, there are studies which have concluded more or less the opposite. According to Sasaki and Hirose (1996), weak writers reported translating more from their L1 to their L2 while writing than good writers, although the difference between the two groups failed to reach significance. In two subsequent studies, Sasaki (2002, 2004) found that novice writers translated more often from their L1 to their L2 than expert writers, and that novices also continued to do so over time (Sasaki, 2004). Similarly, Wang and Wen (2002) concluded that the lower proficiency writers in their study used their L1 far more than the higher proficiency writers. Wolfersberger (2003), who only studied low proficiency L2 writers, also found that they frequently used their L1 during prewriting and made use of translating from their L1 to their L2 in order to compensate for their limited ability to write in their L2. In line with this, Beare and Bourdages (2007) found that highly proficient bilingual writers hardly used their L1 at all during L2 writing (p. 159). Moreover, Woodall (2002) complicated the discussion even further, by including the difference between cognate and noncognate languages as an additional independent variable in his study. He found that overall, intermediate-proficiency writers switched more often from their L1 to their L2 than high proficiency writers, but this effect was influenced by whether they were writing in noncognate (Japanese/English) or cognate languages (Spanish/English). Therefore, Woodall concluded that there seem to be important differences in L1 use between writers. Indeed, “some students appeared to control their L-S [language switching], using their L1 as a tool. For others, L-S seemed out of control, and the L1 seemed more like a crutch to obtain cognitive stability” (Woodall, 2002, p. 20). Finally, in a study on the use of L1 during problem solving, Centeno-Cortés and Jiménez Jiménez (2004) found that intermediate L2 learners used their L1 more often than advanced L2 learners, although advanced L2 learners did use their L1 as well, particularly when problem solving became too difficult.

Unfortunately, studies directly relating L1 use during L2 writing to text quality are few and far between, but there are indications that both translation from the L1 to the L2 and L1 use during L2 writing can be beneficial for some writers (Cohen & Brooks-Carson, 2001; Kobayashi & Rinnert, 1992; Uzawa, 1996; Uzawa & Cumming, 1989). In

addition, Knutson (2006) concluded that L1 use does not always have a negative effect on text quality, because her second best writer used their L1 regularly but still produced good texts. Woodall (2002) also seemed surprised by the fact that L1 use appeared to be positive for high proficiency writers of cognate languages (p. 20).

Finally, some studies focused on the possible effect of task features (such as topic knowledge or cultural factors) on L1 use during L2 writing and text quality, but they all failed to find a significant effect of planning during prewriting in the L1 or the L2 on text quality (Akyel, 1994; Friedlander, 1990; Lally, 2000). However, Friedlander (1990) did find that writers wrote their best texts on familiar topics related to their L1 cultural background, regardless of whether the plans for those texts were produced in their L1 or their L2. Krapels (1990) and Lay (1982) also concluded that tasks on L1-related topics generated more L1 use during L2 writing than other tasks. But the effect of this topic-knowledge factor on text quality remains somewhat unclear (Qi, 1998).

Although the studies reviewed above provided new insights into the possible role L1 plays during writing in L2, overall, a somewhat foggy picture emerges. The general finding appears to be that the use of the L1 during L2 writing can be beneficial, but not in all situations and not for all writers (Cohen & Brooks-Carson, 2001). This appears to depend on writers' L2 proficiency (Akyel, 1994; Beare & Bourdages, 2007; Wang, 2003; Wang & Wen, 2002; Wolfersberger, 2003; Woodall, 2002), the type of task (Wang & Wen, 2002), topic-knowledge (Friedlander, 1990; Krapels, 1990; Lay, 1982; Qi, 1998), or on whether the L1 and the L2 are cognate or noncognate languages (Woodall, 2002). Furthermore, the reasons for L1 use and which cognitive activities are carried out in L1 also remain somewhat unclear. The L1 can be used to solve linguistic or lower-order problems (Beare, 2000; Jones & Tetroe, 1987; Qi, 1998; Wang, 2003; Woodall, 2002), but is also used for higher-order activities such as planning or to prevent cognitive overload (Beare, 2000; Centeno-Cortés & Jiménez Jiménez, 2004; Cohen & Brooks-Carson, 2001; Jones & Tetroe, 1987; Knutson, 2006; Krapels, 1990; Qi, 1998; Roca de Larios et al., 1999; Uzawa & Cumming, 1989; Wang, 2003; Whalen & Ménard, 1995; Woodall, 2002). The main reasons for these conflicting results appear to be methodological in nature. First of all, most of the studies discussed above were qualitative studies, with varying L1s and methods, which were based on a rather small number of participants, usually eight or fewer (Beare, 2000; Beare & Bourdages, 2007; Jones & Tetroe, 1987; Knutson, 2006; Manchón et al., 2000; Qi, 1998; Roca de Larios et al., 1999; Uzawa & Cumming, 1989; Wang, 2003; Wolfersberger, 2003).

Second, a single-task-per-condition design was often used, which means that participants were only required to write a single text in each condition (Akyel, 1994; Beare, 2000; Beare & Bourdages, 2007; Friedlander, 1990; Manchón et al., 2000; Uzawa & Cumming, 1989; Wang, 2003; Wang & Wen, 2002; Whalen & Ménard, 1995; Wolfersberger, 2003; Woodall, 2002). This is problematic because research has indicated that both the writing process and text quality can vary strongly for individual writers (see e.g., Schoonen, 2005; see also Van Weijen, Van den Bergh, Rijlaarsdam, & Sanders, in press-b; Van Weijen, Van den Bergh, Rijlaarsdam, & Sanders, in press-c). This means that the extent to which L1 use occurs and the influence of L1 use on text quality cannot be assessed reliably based on a single text per writer.

Another problem is the fact that it is unclear how L1 use is related to the occurrence of different cognitive activities in L2 writing, such as Generating ideas and Planning. Previous research indicated that L1 use during both planning and generating appears to have a positive effect on text quality in L2 writing, depending on the moment at which planning and Generating ideas occur during the writing process (see Van Weijen, Van den Bergh, Rijlaarsdam, & Sanders, in press-a; Van Weijen, Van den Bergh, Rijlaarsdam, & Sanders, 2008). But the positive effect of such activities on text quality might be mediated by the language in which they occur. Accordingly, whether the occurrence of each activity in L1 while writing in L2 also has a positive effect on L2 text quality is still an empirical question.

A final methodological problem is related to the way in which L1 use was analysed in earlier studies. Unfortunately, many studies did not provide a clear definition or measure of L1 use (e.g., Knutson, 2006; Lay, 1982; Qi, 1998), in some cases because L1 use was not the main focus of the research (Cumming, 1989; Sasaki, 2002, 2004; Uzawa & Cumming, 1989; Whalen & Ménard, 1995; Wolfersberger, 2003). Studies that did attempt to measure L1 use more precisely have either included writers' self-reported percentage of L1 use (e.g., Cohen & Brooks-Carson, 2001; Kobayashi & Rinnert, 1992; Sasaki & Hirose, 1996) or reported the duration or length of L1 use as a proportion of the writing process as a whole (Woodall, 2002). This is questionable because it does not provide any information on the occurrence of different cognitive activities in the L1. A few studies did investigate the proportion of L1 use for specific cognitive activities, albeit in slightly different ways (Beare, 2000; Beare & Bourdages, 2007; Jones & Tetroe, 1987; Manchón et al., 2000; Wang & Wen, 2002). Furthermore, there are indications that writers do not use their L1 to carry out each activity during L2 writing to the same extent. Wang and Wen (2002) found that writers were more likely to use

their L1 to carry out conceptual activities, such as Planning and Generating ideas, while writing in their L2 than for linguistic activities, such as Formulating (see Wang & Wen, 2002, p. 239). This might be related to the fact that conceptual activities such as planning are generally likely to require more cognitive effort than linguistic activities such as Formulating (see Kellogg, 1994, p. 17; Rijlaarsdam et al., 2005, p. 129; see also Stevenson, 2005). If writers experience cognitive overload due to the increase in task complexity that writing in L2 often entails, then it seems likely that they will revert to using their L1 for the most demanding activities, in this case the conceptual ones. This is in line with findings by Centeno-Cortés and Jiménez Jiménez (2004), who found that L2 learners often reverted to using their L1 during problem-solving tasks when solving the problem became too difficult and resulted in “breakdowns in the thinking process” (p. 20). But again, the studies on L1 use mentioned above did not relate their findings to text quality directly, so the influence of the language in which different activities occur on text quality remains unclear.

In sum, these theoretical and methodological problems combined make it hard to generalize results over tasks or across languages, or to establish a direct link between L1 use and text quality, which is a relevant issue for educational purposes. Therefore, in an attempt to advance research in the field, the present study attempts to provide further insight into the role L1 use plays during L2 writing by carrying out an analysis based on multiple tasks per writer. In addition, it seems advisable to focus on specific activities and then determine the extent to which each activity occurs in L1. By relating the L1 occurrence of each activity to text quality, we can hopefully determine the influence L1 use has on text quality more accurately.

Aims and research questions

The aims of this study are twofold. First, we wish to determine to what extent the L1 is used to carry out specific cognitive activities during L2 writing. In line with earlier research, we will focus on conceptual activities, as writers are more likely to use their L1 to carry out these activities than linguistic activities (Wang & Wen, 2002, pp. 239–240). By asking the participants to write various texts each, we hope to determine whether L1 use is relatively stable for individual writers or whether it varies between tasks. This can also help us determine whether writers are more or less inclined to use their L1 while writing in L2 due to personal preferences or whether this is influenced by learner characteristics such as general writing proficiency or L2 proficiency, or by task effects such as the topic of the assignment (see Krapels, 1990, p. 53). Second, we would like to establish more directly what the effect of L1 use is on text quality and to what extent this is influenced by the learner characteristics: general writing proficiency and L2 proficiency (cf. Schoonen et al., 2003). Therefore, the relations between the language in which cognitive activities are carried out during L2 writing and text quality are studied. Thus the main questions in this exploratory study are the following:

1. Do writers use their L1 to carry out conceptual activities while writing in L2?
2. To what extent does L1 use during L2 writing vary for individual writers?
3. Is L1 use while writing in L2 related to text quality?
4. Is this relation influenced by general writing proficiency and L2 proficiency?

Method

Design

Twenty participants were asked to write four texts each, under think-aloud conditions. Participants were all first-year BA English majors whose L1 was Dutch. All the participants graduated from preuniversity education, for which the norm for the central exam for English is the B2 level of the Common European Framework of Reference (CEFR). Most participants were female (85%), which was in line with the male–female ratio of the students in the Arts faculty. The study took place during their first semester at university, and their average age was 18 years and 10 months. The students volunteered to take part and were all paid a small amount for their participation in the study.

The setup of the study required the students to write four short essays in their L1 (Dutch) and four short essays in English (L2). Each participant attended four individual sessions in which they wrote two texts on the computer under

think-aloud conditions. Each writing process was recorded with audio and video equipment so that think-aloud protocols could be produced. Students were given 30 minutes to write each text, but they were free to stop when they thought they were finished, and were given a few extra minutes to round off their texts if necessary. Therefore, the average time they spent writing each essay was not 30 minutes, but 23.46 minutes ($sd = 7.23$ minutes) in L1 and 26.10 minutes ($sd = 6.43$ minutes) in L2. Time on task also varied between tasks in both languages (L1: 10.79–37.64 minutes; L2: 12.83–36.89 minutes).

Participants were trained to think aloud while writing during their first individual session. The training consisted of solving an algebra puzzle, a small crossword puzzle and writing a short text of about five lines while thinking aloud. These short texts had to be written on one of ten randomly assigned topics, such as describing their favourite music, book, film or what they did last weekend. Such a text had to be written on one of the other topics at the start of each subsequent writing session to reactivate their think-aloud mode. Participants were free to think-aloud in their L1, their L2, or both while writing their texts (see also Knutson, 2006, p. 97).

The use of thinking aloud as a tool in writing research has been much debated in the past (see for example, Ericsson, 1998; Janssen, Van Waes, & Van den Bergh, 1996; Manchón, Murphy, & Roca de Larios, 2005; Roca de Larios, Manchón, & Murphy, 2006). However, we agree with Krapels (1990, p. 51) that protocol analysis provides “more useful data” for L2 writing research. Furthermore, we decided to use the method in this study because it is, in our view, one of the best methods for observing the occurrence of conceptual activities such as Planning, Generating ideas, and Evaluating, during the writing process. In the past, some studies required writers to report to what extent they thought they used their L1 while writing in their L2 (e.g., Cohen & Brooks-Carson, 2001; Kobayashi & Rinnert, 1992), but if we want to determine which activities actually take place in L1 during L2 writing, protocol analysis seems the most appropriate method available. We chose to collect concurrent protocols instead of retrospective protocols, because concurrent verbalizations seem most directly related to what writers think while writing. Furthermore, concurrent verbalizations seem more valid than retrospective protocols: “because of the absence of a time interval between the occurrence of a thought and its expression” (Roca de Larios et al., 2006, p. 104; see also Ericsson, 1998; Hayes & Gradwohl Nash, 1996, p. 45). Therefore, we felt that thinking aloud was the most appropriate research tool for this study.

Instruments

Participants were instructed to write a short argumentative essay on one of eight topics (see Table 2). The basic assignment was the same in all cases; only the topic varied between tasks. Each time participants had to write a short essay for a made-up essay contest in the local University Newspaper. The assignment described the goal, the topic, and the target audience of the essay. It also contained six short sources related to the topic, of which they had to incorporate at least two in their texts. An example of an assignment is included in the Appendix. The essay had to include the writer’s own opinion, supported by arguments for or against the topic. Each participant was assigned four topics to write on in each language, based on their participant number. The odd-numbered participants (1 through 19) wrote essays in English on *Compulsory Organ Donation*, *Downloading Music*, *Life as a Student*, and *Soft Drug Legislation*, while the even-numbered participants (2 through 20) wrote in English on the other four topics: *Education in English*, *Surveillance Cameras*, *Having Children*, and *Mobile Phone Use*. Each group wrote on the four other topics in L1 Dutch. The L1 essays were collected to determine the participants’ general writing proficiency. The participants wrote their essays in random order, to minimize the risk of task-order or language effects.

During the last session, participants were asked to complete a vocabulary test in order to obtain a measure of their L2 proficiency. L2 vocabulary is seen as one of the single best predictors of L2 proficiency (see for example, Laufer & Goldstein, 2004, p. 426). The test consisted of 64 items, which were ordered from easy to difficult, and its internal consistency was satisfactory ($\alpha = .81$). Each item was an English sentence containing a blank, which participants had to fill in. The Dutch translation of the word in the blank was provided to help them. Thus it was both a vocabulary and a translation exercise. Participants were given seven minutes to complete as many items as they could and they earned a point for every item that they completed correctly. Because it was a timed test, we were able to determine how fast and how accurately participants were able to find a suitable translation for an L1 word within a certain context. Scores were normally distributed and ranged from 48% to 92%, with an average of 72% ($sd = 10.4$), which indicates that the test’s level of difficulty was appropriate for this group of students.

Table 1
Overview of the 11 main categories included in the coding scheme.

Cognitive activity	Description and protocol example
(Re)-reading the assignment	Reading the assignment and/or the sources
Planning: Self-instructions	Instructions participants give themselves regarding the next step in the writing process (e.g., “ <i>I need to decide how to start</i> ”)
Planning: Goal setting	Paraphrasing task demands in the assignment or setting new goals (e.g., “ <i>This text is going to be about...</i> ”)
Planning: Structuring	Selecting and ordering ideas or making a rough outline (e.g., “ <i>First the pro’s, then the con’s and then my own opinion!</i> ”)
Generating ideas	Paraphrasing ideas from the assignment or generating new ones (e.g., “ <i>Us humans we’re very curious and we like to gossip!</i> ”)
Metacomments	Reflections on the writing process as a whole or comments on the assignment and sources (e.g., “ <i>I had the perfect sentence in my head</i> ”)
Pausing	Silence or interjections (e.g., <i>um, eh</i>)
Formulating	Text production or typing the actual words on the computer
Rereading Own Text	Rereading segments of the text produced so far
Evaluating Own Text	Evaluating the text produced so far at word, sentence or text level (e.g., “ <i>No I’m not gonna say this</i> ”)
Revising Own Text	Revising the text produced so far at the word, sentence or text level (e.g., <i>erases ‘them’ and then types ‘people’</i>)

Data analysis

The data in this study consisted of 79 L2 think-aloud protocols,¹ which were produced by transcribing the audio and video recordings of each L2 writing session. Each protocol was divided into segments by the authors, based on the writer’s behaviour. If a writer switched from one activity to another (e.g., from Planning to Generating ideas), then the segment containing the first activity ended and the new activity was placed in the next segment (see Breuker, Elshout, Van Someren, & Wielinga, 1986). The protocol segments were subsequently coded using a coding scheme, based on Hayes and Flower’s (1980) model of the writing process, and which was used regularly in earlier research (see for example, Breetvelt, Van den Bergh, & Rijlaarsdam, 1994; Couzijn, Van den Bergh, & Rijlaarsdam, 2002; Van den Bergh & Rijlaarsdam, 1999, 2001). The main categories in the coding scheme are shown in Table 1. The coding was carried out by six different coders, who each coded 16 protocols. Each coder coded four protocols which overlapped with one or more other coders, so that the interrater reliability could be determined, which was high (Cohen’s kappa = .95).

Analysing L1 use

Research by Wang and Wen (2002) suggests that whether writers use their L1 depends on the extent to which activities are related to the text itself: “The more the cognitive processing is related to the textual output, the less L1 is used in it” (pp. 239–240). So, conversely, the activities which are least directly related to the textual output are most likely to be carried out in the L1. Therefore, the analysis focused on a number of conceptual activities, for which writers are most likely to use their L1 while writing in L2: *Generating ideas*, *Metacomments*, and *Planning*, which is sub-divided into three different activities: *Self-instructions*, *Goal setting*, and *Structuring* (see Table 1). Generating ideas is not considered to be a type of Planning, because it is more closely related to the content of the text. Metacomments were defined as actions which were not directly related to the content of the text, but more to the way the writing process was carried out or to more general aspects of the writing process as a whole (cf. Braaksma, Rijlaarsdam, Van den Bergh, & Van Hout-Wolters, 2004; Centeno-Cortés & Jiménez Jiménez, 2004; see also Jones & Tetroe, 1987, p. 49).

In line with earlier research, we focused on the “spontaneous, non-prescribed use of the L1 in L2 writing” (Woodall, 2002, p. 8). This means that we did not ask or train the writers in our study to use their L1 while writing in L2. Instead, we analysed their L2 think-aloud protocols to determine to what extent they used their L1 spontaneously while writing in their L2. Each protocol segment which contained one or more L1 words was considered an occurrence of L1 use. In addition, the analysis focused on the proportion of L1 use for each cognitive activity. In other words, for each cognitive activity we determined the proportion of protocol segments that contained L1 use. This proportion was then related to writers’ L2 proficiency, their general writing proficiency, and to the quality of their L2 texts, in order to answer the research questions.

¹ One participant wrote three essays in L2 instead of four due to technical difficulties.

Table 2
Average text quality and range per topic in *z*-scores (*N* = 79).

Task	Topic	<i>N</i>	Mean (sd)	Min.	Max.
A	Education in English: good idea or bad suggestion?	9	-.15 (.131)	-1.96	1.72
B	Having children, yes or no?	10	.17 (.97)	-1.32	1.68
C	Everybody should automatically be a donor, unless they explicitly register against it: good or bad idea?	10	.19 (1.09)	-1.49	1.82
D	Life as a student: a hard life full of stress? Or is not it that bad?	10	.31 (.45)	-.55	.80
E	Do surveillance cameras in inner city areas increase public security?	10	.15 (1.23)	-2.36	1.54
F	Mobile phones: irritating or essential?	10	-.32 (1.34)	-3.08	1.53
G	Downloading music for free: criminal or should be possible?	10	-.17 (.53)	-1.37	.66
H	Soft drugs: should they be legalised or prohibited completely?	10	.18 (.89)	-1.46	1.77
Total		79	.05 (1)	-3.08	1.82

Analysing text quality

The quality of the L2 texts (*n* = 79) was assessed by a group of five raters with high L2 proficiency. The texts were first rated analytically, using a rating scheme with four categories: *Structure*, *Content*, *Argumentation*, and *Conclusion*. The raters performed the holistic rating two weeks later. For this rating, raters received a benchmark essay, worth 100 points, for each topic. Their task was to decide how much better or worse the quality of each essay was than the benchmark essay. The reliability between raters was satisfactory for both methods (analytical: $\alpha = .93$; holistic: $\alpha = .83$) and the correlation between the two ratings was relatively strong ($r = .69$; corrected for attenuation, $r = .79$). Therefore, the scores of the two ratings were combined to form a single text quality score for each essay. The average scores per topic and the overall average score are presented as *z*-scores in Table 2. The mean scores for some topics are higher than for others, but text quality was not affected by the order the texts were written in ($F = .10$; $df = 3, 75$; $p = .96$).

As mentioned earlier, the L1 texts (*n* = 80) were collected to determine our writers' L1 writing skill, as a measure of their general writing proficiency (GWP). The quality of these texts was assessed in the same way as the L2 texts, but by a different group of five raters. These raters did not rate the L2 texts as well, because their L2 proficiency was not sufficient to do so reliably. The between-rater reliability was satisfactory for both the analytical ($\alpha = .88$) and the holistic method ($\alpha = .82$) and the correlation between the two ratings was also rather strong ($r = .74$, or $.87$ when corrected for attenuation). Therefore, general writing proficiency was calculated as the average score for L1 text quality for each writer, over ratings and tasks.

Results

L1 use in L2 writing

The first question was whether writers use their L1 to carry out conceptual activities while writing in their L2. Results indicate that every writer in this study used their L1 at least once while writing in L2, but some writers used their L1 far more frequently than others. In Table 3 the proportion of L1 use for each activity is presented, averaged over writers and tasks.

Table 3 shows that, on average, the proportion of L1 use is below 50% for all five activities. However, some activities, such as Self-instructions (45%) and Metacomments (43%) are far more likely to occur in the L1 while

Table 3
Average proportion of L1 use for each activity.

Cognitive activity	<i>N</i> (overall)	Average L1 use (sd)	Min.	Max.
Self-instructions	1827	.45 (.39)	.00	1.00
Goal setting	60	.07 (.25)	.00	1.00
Structuring	95	.19 (.39)	.00	.99
Generating ideas	3272	.14 (.20)	.00	.66
Metacomments	801	.43 (.39)	.00	1.00

writing in the L2 than other activities. In addition, the variation in L1 use is rather high for all activities; the percentage of L1 use over writers ranges from 0% to 100% for all activities, except Generating ideas, for which L1 use was never higher than 66%. This indicates that some activities occur only in the L2, others only in the L1, and still others in a mixture of L1 and L2 use while writing in L2. Also, it shows that the distribution of the occurrence of cognitive activities is somewhat positively skewed, indicating that there are relatively more individuals with high proportions of L1 use than expected under a normal distribution.

Furthermore, we carried out a repeated measures analysis in order to determine whether the differences in proportion of L1 use between activities were significant. The differences between activities were significant for all pairs of activities ($F > 4.44$; $df = 1, 78$; $p < .04$), except for two pairs: Generating and Structuring, and Self-instructions and Metacomments. No significant differences in the proportion of L1 use could be found for those two pairs, even though their overall frequencies of occurrence do differ (see N in Table 3). These differences in the proportion of L1 use might be related to the observed frequencies of occurrence of the different cognitive activities. An analysis of covariance showed that this is only partly the case; the proportion is related to the frequency, but all the differences in proportions of L1 use mentioned above remain significant.

Some examples of L1 use for each activity are presented in Table 4. These examples show that Self-instructions and Metacomments, which are most likely to occur in the L1 (see Table 3), often occur in the L1 when the writing process falters, while this is less the case for the other three activities, Goal setting, Structuring, and Generating ideas (see

Table 4
Examples of L1 use during L2 writing for each cognitive activity.

Cognitive activity	Protocol segment (participant, task)	Translation of L1 use
Self-instructions	This means that ehm (..) everybody ehm becomes (.) that (.) <i>oooh hoe druk je dat uit?</i> this means that everybody (..) ehm (..) automatically is a donor (3, C) [Reads the assignment:] Everyone can imagine that classes in English (...) <i>nou dan moet ik maar 'ns beginnen met wat schrijven dat lijkt me ook wel 'n idee</i> (..) [Reads the assignment:] "Education in English: good idea or bad suggestion?" (10, A)	Oooh how do you say that? Well then I should start writing something, that sounds like a good idea
Goal setting	If <i>nee</i> (..) <i>maar ik wil eigenlijk nog even samenvatten wat ik eigenlijk heb gezegd</i> (...) (1, D) (..) <i>dus dat is sowieso mijn standpunt</i> (.) <i>en dan moet ik de mensen een beetje gaan overtuigen daarvan</i> [turns over the page] <i>samen met deze</i> (..) <i>twee bronnen</i> (..) [Reads the assignment:] you must use at least two extracts from the 'References' (see next page) (10, A)	No (..) but really I want to summarize what I've actually just said So that is my point of view (.) and then I should try to convince people of it (..) together with these (..) two sources
Structuring	[Reads the assignment:] Piet Hein Donner, Minister of Justice, {...} doesn't feel anything for the proposal {...} According to the mayors, that would (.) decriminalize the weed cultivation, but Donner disputes that. (..) <i>even kijken, misschien kan ik er wel twee argumenten van maken</i> [splits paragraph into two paragraphs] uhm so the ministry of Justice (3, H)	Maybe I can turn it into two (..) arguments
Generating ideas	I think it's essential [turns over the page] (.) ehmm (...) [researcher asks: what are you thinking?] PP: I was thinking of (.) <i>ik ben eh inleiding aan 't verzinnen ik dacht misschien kan ik een</i> [laughs out loud] <i>mobiël geluidje doen maar dat kan je niet typen ehmm</i> (..) <i>even kijken ehmm</i> (..) [laughs out loud] (.) ehmm (..) [then rereads the assignment] (6, F)	I'm uhm trying to come up with an introduction, I thought maybe I could [laughs out loud] do a mobile phone noise but I can't type that let me see
Metacomments	Which is recognized by (..) <i>beetje valsspelen maar ja</i> (..) <i>anders heb ik echt geen bronnen</i> [starts to reread the sources] (4, E) Wants to have (...) <i>ohhh! ik weet echt even niet wat ik wil zeggen</i> (..) (8, B) The network services are not totally responsible (.) for the decline of CD (.) sales (.) and (..) and (...) downloading music will (.) lead to satisfied customers (...) ok (.) <i>ik spreek mezelf wel een beetje tegen</i> (...) (9, G) Bilingual (.) <i>oh mag geen vraagtekens in de titels dat heb ik geleerd</i> (..) <i>dan gaan ze helemaal flippen</i> (..) bilingual (..) [reading the assignment:] offers you the chance to lay your foundation (10, A)	It's cheating a little but well (.) otherwise I really won't have any sources [in my text] Ohhhh! I really don't know what I want to say right now I'm sort of contradicting myself a little Oh I was taught that I can't use question marks in titles (.) then they'll totally freak out

Table 5
Correlations between the proportion of L1 use between cognitive activities.

Cognitive activity	SI	GS	St	GI	MC
Self-instructions	–				
Goal setting	.26*	–			
Structuring	.47**	.33**	–		
Generating ideas	.66**	.14	.44**	–	
Metacomments	.75**	.20	.38**	.64**	–

* $p < .05$.

** $p < .01$.

Table 4). Finally, it is important to note that Goal setting and Structuring, two types of Planning, occurred extremely infrequently overall during writing in L2, on average in less than 1% of protocol segments while writing in L2. In addition, we found that the proportion of L1 use for these activities correlated significantly with their overall proportion of occurrence during the writing process (Goal setting: $r = .51$, $p < .001$; Structuring: $r = .41$, $p < .001$). This suggests that writers who were likely to engage in Goal setting or Structuring, were likely to do so in their L1 while writing in L2.

Variation in L1 use for individual writers

The next question was to what extent the use of L1 while writing in L2 varies for individual writers? To answer this question, we must answer two underlying questions: (a) Are there participants who use their L1 frequently and others who hardly use it at all? and (b) Is L1 use stable for individual writers (over tasks)? To answer the first question, we correlated the proportions of L1 use for each activity with one another, to determine whether the extent to which activities occur in the L1 is related (see Table 5). If there is a strong correlation between the proportions of L1 use for two activities, then writers who carry out the first activity often in their L1 while writing in L2 are likely to carry out the second activity in their L1 as well. Table 5 shows that only self-instructions and metacomments are strongly correlated ($r = .75$, $p < .001$). For all the other activities, the correlations are much lower, and the lowest, between Goal setting and Generating ideas is not even significant ($r = .14$, $p = .21$). This indicates that writers do not appear to execute their conceptual activities exclusively in their L1 or L2 while writing in L2 for all tasks and all activities. However, if writers are likely to carry out Self-instructions in their L1 then they are also likely to do so for Metacomments.

The answer to the second question, whether L1 use is stable for individual writers, is indicated by the standard deviation between tasks (for individual writers). Results indicate that Generating is rather stable between tasks (mean $sd = .08$), while Goal setting (mean $sd = .14$), Metacomments (mean $sd = .16$), Self-instructions (mean $sd = .17$), and Structuring (mean $sd = .23$) show increasing signs of between-task variation. So, individuals who generate in their L1 while writing in L2 during one task are likely to do so in all their other L2 writing tasks as well. But for Structuring, L1 use during one task is hardly related to L1 use in other tasks. Thus, we can conclude that L1 use is more likely to vary between tasks for some activities than for others. Overall, we can say that the extent to which writers use their L1 while writing in L2 does not generally appear to be a writer-specific characteristic, as L1 use varies for individual writers in a different way for each activity. Therefore we cannot categorize writers in terms of the way in which they use their L1 while writing in L2.

Relations between L1 use, L2 proficiency, general writing proficiency, and text quality

The third research question was whether L1 use while writing in L2 is related to text quality, while the fourth question was whether this relation is influenced by general writing proficiency and L2 proficiency. These two questions are answered simultaneously in this section, as L1 use, general writing proficiency, and L2 proficiency are interrelated.

To determine whether L1 use while writing in L2 is related to text quality several Lisrel models were fitted to the data. We distinguished between four different models. In the first model, the no-relation model, neither cognitive activities, nor general writing proficiency or L2 proficiency influenced L2 text quality. In the second model, the cognitive activity model, relations between the language in which cognitive activities were carried out (L1 or L2) and

Table 6

Indices for the fit of different models for the relation between cognitive activities (in L1 and L2), L2 text quality, L2 proficiency, and general writing proficiency.

Model	Fit			Difference in fit			
	χ^2	<i>df</i>	<i>p</i>	Comparison	χ^2	<i>df</i>	<i>p</i>
(1) No-relation model	104.36	46	<.001	1 versus 2	39.28	11	<.001
(2) Cognitive activity model	65.08	35	.002	2 versus 3	21.81	11	.026
(3) L2-proficiency model	43.27	24	.002	3 versus 4	31.23	11	.001
(4) General writing proficiency model	12.04	14	.603				

text quality were estimated (Question 3). In the third model, the L2 proficiency model, it was assumed that L2 proficiency influences L2 text quality in two ways. First, L2 proficiency influences the occurrence of cognitive activities and hence L2 text quality. Second, there is a direct relation between L2 proficiency and L2 text quality (Question 4). In the fourth model, the general writing proficiency model, both indirect (via cognitive activities) and direct effects of general writing proficiency on L2 text quality were estimated as well (Question 4). The fit of the models is expressed in terms of a Chi-square distributed statistic. The difference in fit of these four nested models was compared by means of the difference in Chi-square (which is also Chi-square distributed with accompanying difference in degrees of freedom (*df*)).

Table 6 appears to indicate that the no-relation model (model 1) does not fit the observed data. Allowing relations between cognitive activities (in both L1 and L2) and text quality, as in the cognitive activities model, improves the fit of the model. This improvement in fit is significant ($p < .001$). The assumption that L2 proficiency influences the language in which cognitive activities are carried out is tested in the third model. This model significantly improves the fit to the data, as the difference in fit with the previous model is significant ($p = .026$). In the fourth and final model, general writing proficiency is assumed to influence the occurrence of cognitive activities as well. This model clearly fits the data well, and the improvement on the previous model is significant ($p = .001$). Therefore, we conclude that there is a relation between cognitive activities and L2 text quality, and that the occurrence of cognitive activities is influenced by general writing proficiency.

In Table 7 the regressions from L2 text quality on cognitive activities are presented. It shows that only the use of L1 for Metacomments is related to L2 text quality, but this is a negative effect ($\beta = -.50$). So, writers who make many Metacomments in their L1 while writing in their L2 wrote relatively poor quality L2 texts. For the other activities no relation between writers' L1 use and L2 text quality was shown. For L2 use, there appears to be a substantial relation between all five activities and L2 text quality. However, for Self-instructions and Metacomments this relation is negative, while for Goal setting, Generating, and Structuring it is positive. Together these activities (in L1 and L2) explain 48% of the differences in text quality.

The influence of general writing proficiency on cognitive activities while writing in L2 is also presented in Table 7. It appears that all regression weights for the L1 are negative, while all regression weights for the L2 are positive. Hence, writers with lower general writing proficiency are likely to carry out cognitive activities in their L1 while writing in their L2, while writers with higher general writing proficiency are likely to use their L2 while writing in L2.

Table 7

Regression weights for the relation between cognitive activities (in L1 and L2) and L2 text quality (above) and for the relation between general writing proficiency and cognitive activities (in L1 and L2) (below).

Cognitive activity in L1 or L2	Cognitive activities				
	Self-instructions	Goal setting	Generating	Structuring	Metacomments
Regressions on text quality (L2)					
L1	.10	.07	.02	.12	-.50*
L2	-.51*	.58*	.38*	.23*	-.23*
Regressions from general writing proficiency on cognitive activities					
L1	-.15*	-.20*	-.14*	-.07	-.37*
L2	.20*	.19*	.14*	.24*	.15*

* Significant ($p < .05$).

In **Table 7** no effects for L2 proficiency are presented. None of the regression weights for cognitive activities on L2 proficiency proved to be significant; only the direct effect of writers' L2 proficiency on L2 text quality proved significant ($\beta = .27$). So students with a high L2 proficiency score wrote better texts. But L2 proficiency does not seem to influence the writing process. Also not in the table is the direct effect for general writing proficiency on L2 text quality. This effect is significant as well ($\beta = .46$); good writers in the L1 are also (relatively) good writers in the L2. Together these two variables explain 27% of the variance in L2 text quality scores.

Discussion

In line with earlier research, this study has shown that L1 use varies between writers, although all writers use their L1 while writing in L2 to some extent (Knutson, 2006; Wang & Wen, 2002). In addition, some activities, such as Self-instructions and Metacomments are more likely to occur in L1 than others. The correlation between Self-instructions and Metacomments indicates that if writers use their L1 for one of these activities while writing in their L2, they are also likely to use their L1 for the other activity. But this does not mean that we can conclude that L1 use is generally a strong writer-specific characteristic. Therefore, the question remains why writers use their L1 during L2 writing. It seems likely that it is not so much the fact that L1 use occurs which influences the quality of the text produced, but rather that L1 use is an indication that writers are finding it difficult to orchestrate their cognitive activities at a specific moment during the writing process. Thus, when writers experience cognitive overload while writing in L2, this might cause them to revert to L1 use (cf. Cohen & Brooks-Carson, 2001; Knutson, 2006; Qi, 1998; Woodall, 2002), which in turn can result in a decrease in text quality. This explains why highly skilled writers are less likely to use their L1 (see also Beare & Bourdages, 2007), as they are less likely to experience cognitive overload due to their advanced writing proficiency. Less proficient writers are more likely to experience cognitive overload as they have to solve the problems they are confronted with during writing, and hence, revert to their L1. This holds especially for activities which appear to govern the writing process, such as Self-instruction and Metacomments, which are generally likely to require more cognitive effort than linguistic activities such as Formulating (cf. Kellogg, 1994; Rijlaarsdam et al., 2005; Stevenson, 2005). Moreover, this is in line with research by Centeno-Cortés and Jiménez Jiménez (2004), who found that L1 use decreases as L2 proficiency increases. However, their findings did indicate that advanced L2 speakers reverted to their L1 when “the problem became too difficult” (p. 31).

Students at all proficiency levels use their L1 for a number of activities while writing in L2 (Knutson, 2006; Woodall, 2002). Furthermore, as predicted, general writing proficiency appears to have a negative effect on L1 use, for most activities. This means that proficient writers are less likely to use their L1 while writing in their L2 than weaker writers. L2 proficiency only appears to have a direct effect on L2 text quality. Therefore, our results confirm those of earlier research (cf. Jones & Tetroe, 1987; Sasaki, 2002, 2004; Sasaki & Hirose, 1996; Wang & Wen, 2002; Wolfersberger, 2003; Woodall, 2002). More specifically, our findings appear to confirm those of Schoonen et al. (2003), who concluded that general writing proficiency overshadows the influence of L2 proficiency on L2 writing.

Regarding the effect of L1 use on L2 text quality, we can conclude that L1 use only appears to be negatively related to L2 text quality for Metacomments. This partly confirms the results of earlier research, which also suggested that L1 use has a detrimental effect on L2 text quality (see Cohen & Brooks-Carson, 2001, p. 180; Knutson, 2006; Sasaki, 2002, 2004; Sasaki & Hirose, 1996; Wang & Wen, 2002; Wolfersberger, 2003). However, our results indicate that Metacomments also have a detrimental effect on L2 text quality when carried out in L2. This suggests that writers use Metacomments in an attempt to solve the problems they encounter while writing. This is supported by the fact that Self-instructions are also negatively related to L2 text quality when they occur in L2. Hence, both Metacomments and Self-instructions possibly indicate that writers are probably suffering from a degree of cognitive overload. On the other hand, more content-oriented activities such as Goal setting, Structuring, and Generating appear to be positively related to L2 text quality when writers carry them out in their L2.

Finally, we predicted that both general writing proficiency and L2 proficiency would have a mediating influence on the relationship between writers' L1 use and L2 text quality. Results indicated that no such relation could be shown for L2 proficiency. But results for general writing proficiency indicate that less proficient writers revert to L1 use while writing in L2 more often than writers who are more experienced writers. General writing proficiency influences the language in which cognitive activities are carried out during L2 writing, and thus also indirectly influences L2 text quality.

The fact that only a small effect could be shown for L2 proficiency on L2 text quality might be due to the way in which L2 proficiency was measured. Although word knowledge has been shown to be related to L2 proficiency in

general, and writing proficiency in particular, a more general L2 proficiency test might be preferable. However, an alternative explanation might be that our participants were, on the whole, sufficiently proficient in L2 to be able to write a relatively coherent text, but that they reverted to L1 use when the writing task became too demanding. This seems likely because research by Centeno-Cortés and Jiménez Jiménez (2004) has shown that although intermediate L2 learners were the most likely to revert to using their L1 during problem solving, advanced L2 learners were also likely to do so when they experienced difficulties during problem solving. Thus, even rather proficient L2 learners tend to revert to their L1 when task demands become too great (cf. Centeno-Cortés & Jiménez Jiménez, 2004, p. 31).

So, general writing proficiency appears to have an effect on the relation between L1 use and L2 text quality, but also on the relation between L2 use and L2 text quality. For L2 proficiency no relation with the writing process could be shown. This might be due to the choice we made to include five specific cognitive activities in this study. It could well be that the relation between L2 proficiency and the writing process is significant for linguistic activities, such as Formulating (cf. Wang & Wen, 2002), which we did not include in our analysis. Furthermore, because we did not study the writing process as a whole, whether L1 use is a strategy which writers actively employ while writing in L2 also remains to be seen (cf. Uzawa & Cumming, 1989; Whalen & Ménard, 1995; Wolfersberger, 2003).

Conclusions and suggestions for further research

Conclusions

The aim of this study was to determine to what extent certain conceptual activities occurred in L1 during writing in L2, whether L1 use was related to text quality and whether this relationship was mediated by general writing proficiency and L2 proficiency. Based on our findings, a number of conclusions can be drawn. First of all, it was shown that all writers use L1 while writing in L2 to some extent. Second, we predicted that L1 use would be related between activities. This was only confirmed to some extent by our results, as the correlations between most activities were moderate at best, except for between Self-instructions and Metacomments. Third, it was shown that L2 proficiency does not influence the writing process and is only directly related to L2 text quality. Finally, general writing proficiency influences L2 text quality directly as well as indirectly via the writing process. General writing proficiency has a negative influence on L1 use during L2 writing, and a positive effect on L2 use during L2 writing. L1 use during L2 writing is negatively related to L2 text quality, at least for Metacomments. L2 use, on the other hand, appears to be positively related to L2 text quality for Goal setting, Generating ideas, and Structuring, but negatively related to L2 text quality for Self-instructions and Metacomments. Hence, there is an indirect effect of general writing proficiency on L2 text quality.

Suggestions for further research

One of the advantages of this study is that we included a multiple-task-per-writer design. But a possible limitation is the fact that we only included tasks in a single genre, argumentative essays, which makes it impossible to generalize our findings across genres (see also Wang & Wen, 2002; Woodall, 2002). Therefore, future research should not only include multiple texts per writer, but also several different types of texts, in order to determine whether L1 use differs between types of tasks. Second, it would be wise to include several levels of L2 proficiency or writing skill in future research. Our participants were all first-year English students at University, which implies that they had all attained a certain level of L2 proficiency, and, therefore, our comparison between writers was really a comparison of writers at a similar level. Comparing L1 use of writers at different levels of L2 proficiency (see e.g. Wang & Wen, 2002) or comparing how writers L2 proficiency and L1 use change over time (Sasaki, 2004) could prove informative. One might expect that a mediating effect of L2 proficiency on the relationship between L1 use and text quality would be present for writers with a much lower level of L2 proficiency. Third, our analysis only focused on L1 use for conceptual activities. Therefore, we could not test Wang and Wen's (2002) idea that activities which are more closely linked to text content occur less frequently in L1 while writing in L2. This could be investigated in subsequent research by analysing and comparing the proportion of L1 use for both conceptual and linguistic activities. Furthermore, including linguistic activities in the analysis could also help us determine whether the relation between L2 proficiency and the writing process is significant for linguistic activities, such as Formulating (cf. Wang & Wen, 2002), as well as help clarify whether L1 use is a strategy which writers actively employ while writing in their L2.

Finally, our results only partly permit us to infer causal relations between L1 use and text quality, as our analyses were correlational in nature. This means that studies with experimental manipulations must be set up to further confirm our findings. This could prove challenging, however, as research has indicated that writers are likely to use L1 while writing in L2, even when they are included in an “L2-only” condition.

Appendix. An example of an assignment

Downloading music for free

The NSU, the National Student Union, is organising a national essay contest, especially for students. You are also taking part. You absolutely want to win. The winning essay will be printed in all the university newspapers, including the U-blad. The U-blad is read by students and employees of the university.

The subject of the essay has already been decided and was described in the U-blad as follows:

Do you pay for the songs that you like? Do you ever buy a CD? Or do you only download the newest hits from internet for free? The discussion concerning the (il)legal downloading of music is still a hot topic and students make up a large part of the population of internet users who download music. That is why the NSU wants to pay attention to this subject in a special edition of the U-blad. We want to hear from students what they think. Decide what you think and send us your response!

Assignment:

Write an essay in which you give your opinion on the question: “Downloading music for free: criminal or should be possible?”

The essay has to meet the following requirements, set by the Jury:

1. Your essay must be (about) half a page in length.
2. You must do your best to convince your readers, readers of university magazines, of your opinion.
3. You must give arguments to support your opinion.
4. Your essay must be structured in a good and logical way.
5. Your essay must look well-cared-for (think of language use and spelling).
6. In your essay you must use at least two extracts from the “References” (see next page). You must include these extracts in your essay in a meaningful way.

You have 30 minutes to complete this assignment.

Good luck!

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Downloading music from the internet has become popular, because of the option of downloading music for free. [...] Searching for and downloading music for free is permitted in the Netherlands. However providing music yourself for others to download is not permitted. Source: Bondonline, Digitale Consument, December 2004.

Downloading music from the internet causes an increase in CD-sales, according to a report by market researcher Jupiter Media Metrix. The results of the study contradict claims made by the recording industry. [...] Music sales dropped last year by five percent, according to the music industry, due to illegal downloading. [...] According to the researchers, the music industry should cherish the users of download platforms instead of suing them. Most users are real music fans, who spend more money on music than average. Source: www.tiscali.nl, May 4, 2002.

Recent research, conducted by researchers from Harvard University and the University of North Carolina, has shown that network services, such as KaZaA have very little to do with the decline in audio-CD sales. [...] According to the researchers the effect is “statistically even zero.” KaZaA-president Nikki Hemming has already stated she is pleased with the study. “It shows that the music industry should not combat us, but should cooperate with us.” [...] The Recording Industry Association of America (RIAA), [...] has stated that the results contradict those of other studies. Spokeswoman Amy Weiss: “Several other studies have shown the opposite; therefore we still believe that people who download music, buy less music in stores.” Source: Joost Blokzijk, www.ZDnet.be, April 5, 2004.

You do pay a price when downloading for free. [...] And downloading for free is a bit fishy. When you do not provide music for others to download, but you do download illegally uploaded music to your own computer for free, you’re applying double standards. The Consumers’ organization doesn’t condone downloading for free. Source: Bondonline, Digitale Consument, December 2004.

A recent study, conducted by researchers from Harvard University and the University of California, has shown that (illegally) downloading music barely has any effect on the sales of music-CD’s. [...] In many cases downloading actually appears to have a positive effect on the sale of CD’s. The authors of the research report confirm the opinion of many downloaders, namely that most of the people who download certain types of music wouldn’t have bought that music if they couldn’t have downloaded it. The RIAA states that the decline in music sales from more than 13 billion in 2000 to 11 billion in 2003 is almost entirely due to illegal downloads. According to others however, the decline is a result of the economic recession in which the world has found itself over the past few years, as well as increased competition from other forms of entertainment, such as DVD’s. Source: M. Sturm, www.tweakers.net, March 30, 2004.

“Europeans love on-line music – as long as it’s free”. 36% of downloaders say they buy less CD’s because they download music for free. Only 10% say that they have started buying more. Source: Forrester Research – Europe, Augustus 2004.

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