



The effects of adapting a writing course to students' writing strategies

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Background. When writing a text, students are required to do several things simultaneously. They have to plan, translate and review, which involve demanding cognitive processes. In order to handle this complexity, writers need to develop a writing strategy. The two most well-defined writing strategies that have been identified, are those of a planning strategy and a revising strategy.

Aims. To establish whether students will be more competent in managing the complexity of writing when writing instruction is adapted to their habitual writing strategy, thus resulting in better texts.

Sample. 113 high school students (10th grade).

Method. Students were randomly assigned to either the planning or the revising condition. To identify writing strategies, students completed a questionnaire concerning their planning and revising tendencies. To measure the level of writing skill, students' texts written during pre-test and post-test were analysed.

Results. The effect of instruction based on a planning strategy interacted with the level of planning or revising strategy: the greater the use of such a strategy, the larger the effect on writing skill. In contrast, the effect of instruction based on a revising writing strategy did not interact with the level of planning or revising strategy. Results imply that students with strong tendencies to plan or revise profited from writing instruction based on a planning strategy, while students with a low tendency to plan or revise profited more from instruction based on a revising strategy.

Conclusion. Adapting writing instruction to students' level of writing strategy, is an effective approach for learning to write.

In 1980, Hayes and Flower introduced their cognitive model of writing which has profoundly influenced the vocabulary people use when talking about writing processes.

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According to this model, the writing process consists of three components that may continuously interact: Planning what to say, translating those plans into written text and reviewing those written texts or plans. All three components of the writing process are cognitively highly demanding, consuming much of the available working memory capacity (Kellogg, 1994). A writer's working memory may even be overloaded when simultaneously planning, translating, keeping in mind the genre, editing for spelling and so on (McCutchen, 1996). The complexity of the model and the high working memory requirements often raised questions of how writers manage the demands of writing tasks. To manage these demands, writers can and often do, 'break the writing process into separate stages such as planning thoroughly before beginning to write or writing a rough draft and revising later' (McCutchen, Covill, Hoyne, & Mildes, 1994, p. 264). In other words, writers develop a writing strategy that allows them to partition and sequence the planning, translating and revising, to manage the complexity of orchestrating the components of the writing process (Torrance, Thomas, & Robinson, 1994).

Different writing strategies

In general, the two most well-defined strategies that have been found in writing research are a planning strategy, in which writers 'concentrate on working out what they want to say before setting pen to paper, and only start to produce full text once they have worked out what they want to say', and a revising strategy, in which 'writers work out what they want to say in the course of writing and content evolves over a series of drafts' (Galbraith & Torrance, 2004, p. 64). Consistent evidence of the planning writing strategy and the revising writing strategy, as well as less well-defined combinations of planning and revision, was found by Torrance, Thomas, and Robinson (1994, 1999, 2000). In a cluster analysis of questionnaire responses produced by postgraduate students when writing their theses, Torrance *et al.* (1994) identified three distinct groups: Planners, revisers and mixed strategy writers. Planners reported that they preferred to have their ideas clear before they started to write and did not develop their ideas much during writing. They made detailed plans before writing and wrote only one, or at most, two drafts of the text. Revisers, by contrast, reported that they could not think without writing and that it was only after writing something down that they felt they understood their own arguments. They planned less and wrote more drafts than the planners. The third group, mixed strategy writers, both planned and wrote multiple drafts.

In a later study, Torrance *et al.* (1999) used no questionnaires, but more direct information on writing strategies and their effects; undergraduate writers were asked to complete logs of the processes they engaged in, while writing coursework essays. Evidence of similar planning and revising strategies as observed among postgraduate writers was found. However, in this study, the third group, unlike the mixed strategy writers in the previous study, showed low rather than high levels of both planning and revision, in essence writing single drafts without much pre-planning. Furthermore, Torrance *et al.* recorded the marks students received for their essays and found no significant relationship between writing strategy and essay mark. They conclude that 'there was no evidence that one strategy was more successful than the others, either in terms of efficiency of working or in terms of the quality of the final product' (Torrance *et al.*, 1999, p. 198).

In high school students' writing, the three components of the Hayes and Flower (1980) model do not seem to be connected. In studies among intermediate grade writers

(Whitaker, Berninger, Johnston, & Swanson, 1994) and junior high writers (Berninger, Whitaker, Feng, Swanson, & Abbott, 1996) students were given a sequence of tasks, each indicating planning, translating or revising. Results showed that skills in planning, translating and revising were not linked. Thus, the cognitive processes involved in writing may be unevenly developed in students of different grades, as is suggested by the above studies describing writing strategies (Torrance *et al.*, 1994, 1999).

Planning and revising without assistance may be difficult for students. Consequently, guided conditions were added in the studies by Berninger *et al.* (1996) and Whitaker *et al.* (1994). Students were assigned to different conditions in which to perform the writing tasks: a guided and a non-guided condition. The guided condition consisted of scaffolding in the form of structured cues. Results showed that guidance of planning did not result in better quality of writing for both types of students. Guidance of revising resulted in better scores of intermediate grade writers, but not for the junior high school students. However, Berninger *et al.* (1996, p. 47) suggest that guidance in planning and/or revising might be beneficial after all, but in other and longer interventions.

Stability of writing strategies

A crucial question considering students' writing strategies is whether these writing strategies are necessarily *stable* characteristics of students. In an experiment with a longitudinal design, Torrance *et al.* (2000) examined drafting strategies used by undergraduate students. Evidence for a similar set of writing strategies as in their earlier research was found. They also reported on the stability of students' writing strategies and found that 85% of the students had a predominant writing strategy. No evidence of systematic change in writing strategy from year to year among these students was observed.

Similarly, in a study examining the transitions between components of the writing process, Levy and Ransdell (1996) found evidence of distinctive 'writing signatures' for individual writers. These writing signatures reflected a characteristic way of combining processes across different writing sessions. Self-report studies of experienced writers, which investigate habitual writing methods, rather than those employed on a specific writing task, have also found consistent individual differences (Hartley & Branthwaite, 1989). Thus, the scarce research that has been done on this subject supports the idea that to at least some extent, there is stability in the different writing strategies students tend to use.

Learning to write a new genre

Learning to write well is not only a matter of learning how to carry out and combine, the different components of the writing process. It also involves learning what the particular form of discourse is and how to incorporate these genre features into the writing process. This increases the complexity of the writing process and the demands on working memory resources even more. This can be illustrated by the finding that, when learning a new genre, even skilled adult writers sometimes rely on the less demanding process of knowledge telling instead of the recursive approach that Hayes and Flower (1980) described (Berninger, Fuller, & Whitaker, 1996, p. 214).

In this study, we were specifically concerned with learning how to write argumentative texts. This has become a significant part of the language curriculum in

upper secondary education and is something that high school students in the Netherlands (and elsewhere) often struggle to complete effectively (Oostdam, 2005). The approach for learning to write argumentative texts in Dutch secondary education text books is derived from the pragma-dialectical argumentation theory of Van Eemeren and Grootendorst (1992). This theory uses an ideal model of a critical discussion as a starting point; argumentative texts are reconstructed and analysed as contributions to critical discussions. In terms of the pragma-dialectical argumentation theory, writing an argumentative text consists of four stages: (1) taking a clear standpoint on the issue at state; (2) generating arguments to support a standpoint; (3) selecting main arguments and subarguments and considering the possible counterarguments readers might raise; and (4) determining the global text structure (Oostdam, 2005).

The present study

When strategy choice in writing instruction in secondary education in the Netherlands is addressed, it almost invariably includes directions to 'write a plan before writing'. Possible alternatives are rarely offered. The emphasis on planning before writing has also been supported by several experimental studies (Kellogg, 1988, 1994; Lavelle, Smith, & O'Ryan, 2002; Piolat & Roussey, 1996). However, we assume that students will be better able to manage the complexity of learning to write in a new genre, when they write in a way that matches their own writing strategy. To test this contention we first designed a course 'Learning to write argumentative texts about literature', which consisted of five units introducing students to the basic ingredients of an argumentative text. By choosing literature as the topic to write about in this course, we integrated the teaching of argumentative writing and teaching literature, which are both important but separate learning goals in upper levels of Dutch secondary education (see Kieft, Rijlaarsdam, & Van den Bergh, 2006). We then created two different versions of the course, based on either the kind of planning strategy embodied in Kellogg's (1988, 1994) research or the revising strategy described by Galbraith and Torrance (2004). Both versions offered guidance in the generation of ideas in the two kinds of strategies (thinking scheme or free writing), as well as guidance on how to write an argumentative text for an audience (using either a planning strategy or a revising strategy). The two resulting courses, therefore, shared a common core designed to explicate the goals of argumentative writing, but varied in whether these goals were taught in the context of a planning drafting strategy (planning condition) or a revision drafting strategy (revision condition). To identify individual differences between writers, students completed a questionnaire about drafting strategies used previously in research with Dutch high school students (Janssen & Overmaat, 1990).

This enabled us to test two hypotheses. We expected students to be better able to manage the complexity of learning to write a new genre when the writing tasks were presented in the context of a writing strategy that matched their habitual writing strategy. Thus, we hypothesize that:

- (1) The more strongly students tended to apply a planning strategy, the more they would benefit from the planning condition;
- (2) The more strongly students tended to apply a revising strategy, the more they would benefit from the revising condition.

Method

Participants

Our study was conducted in real classrooms, as a part of the regular language and literature curriculum in 10th grade. The initial sample was 121 students from 10th grade classes at a secondary school in Amsterdam, the Netherlands. The scores of eight participants were excluded (they missed more than half of the lessons). The participants came from various ethnic and linguistic backgrounds (including Dutch, Moroccan, Surinamese, Turkish and Antillean), but all spoke Dutch fluently, had attended Dutch primary school and were enrolled in upper secondary education. Five classes were involved: two ($N = 52$) were from the higher general secondary education track and three from the pre-academic secondary education track ($N = 61$). Within classes, students were randomly assigned to either the revising ($N = 56$) or the planning condition ($N = 57$), so that condition and classroom did not confound.

No differences were observed between conditions on gender ($\chi^2(1, N = 113, p = .52)$), age ($t(111) = -.61, p = .55$) or aptitude ($t(111) = -1.86, p = .07$) (see Table 1). Aptitude was determined by students' scores in the end of primary school test, a standard test in the Netherlands, administered in the sixth grade. This test contains multiple-choice items measuring academic skills in four areas: language, mathematics, study skills and world orientation. For 89 of the 113 students, these data were available from the school administration records. We estimated missing aptitude scores with regression analysis by using all relevant student variables.¹

Table 1. Distribution of gender (number of male and female students), mean age (in years), and aptitude score of the participants in the conditions

Variable	Revising condition	Planning condition
Male/female	30/26	34/23
Age	16.18 (.74)	16.27 (.77)
Aptitude	542.81 (3.75)	544.07 (3.48)

Note. Standard deviations in parentheses.

The course

We developed a course on learning to write complete and convincing argumentative texts about short literary stories. In the lessons, the argumentative text is considered as a contribution to a discussion (cf. pragma-dialectic perspective on argumentation, Van Eemeren & Grootendorst, 1992). The topic for discussion is literature: students read a short literary story and learn to formulate a question to discuss in their text. An example of this is: 'Is this story too old-fashioned for today's students?' Furthermore, students learn to present a standpoint, to generate, select and arrange arguments to support their point of view and to integrate these elements in a rhetorically attractive text. Students' prior knowledge of writing argumentative texts about literature was limited: in the Netherlands, students start to read adult literature in the 10th grade. Students start

¹ We used regression analysis to estimate the relation between aptitude and sex, age, school type, pre-test, quality of learning, evaluation of workbooks and writing strategy. By means of this regression equation, an aptitude score was estimated for students who did not take the aptitude test (compare, Little & Rubin, 1987). Correlation between estimated aptitude score and observed aptitudes was .52.

learning to write argumentative texts in lower secondary education. At the end of the ninth grade, they know that an argumentative text aims to convince the audience by introducing a standpoint that is supported by arguments. The issues students generally have to write about, cover subjects such as after-school jobs, smoking, having exotic animals as pets – but do not include literature (Kieft & Rijlaarsdam, 2002).

The course consisted of five 90-minute units, once a week. The lesson material was completely self-instructing. The teachers' role was to coach students while they worked independently.

Adaptations to writing strategies

Table 2 shows the five phases in each unit of the course. The first phase consists of reading a short literary story and is the same in both conditions. The second phase is the phase of discovery. In the units in the revising condition, students discovered ideas by using writing as a thinking tool, by 'free writing' (Elbow, 1973). Students wrote down their perceptions, feelings, memories, reactions and responses to the story, while writing without stopping for at least 5 minutes. In the planning condition, students discovered their ideas by filling in a thinking scheme, in which they write down their thoughts in a few short words (Skeans, 2000).

Table 2. Overview of the sequence of learning activities for both conditions

Main phases	Learning activities	Revising condition	Planning condition
(1) Reading	Reading a literary story	+	+
(2) Discovery	Generating ideas		
	• free writing	+	–
	• thinking scheme	–	+
(3) Theory	Reading rhetorical theory	+	+
	Applying theory in short writing tasks	+	+
(4) Composing	Planning		
	• writing discovery draft of the text	+	–
	• planning the text	–	+
	Writing and revising		
	• rereading and revising the text	+	–
	• writing the text	–	+
(5) Sharing	Sharing texts: Giving and receiving feedback	+	+

+ , present; – , not present.

In the third phase, students in both conditions read some theory about aspects of the argumentative text genre (shown in Table 3) and carried out one or two exercises to apply the theory.

The fourth phase consisted of composition. In the planning condition, students composed their text by planning it first. Creating a scheme stimulated students to think about the aim, audience and content of the text. After that, students reread, evaluated and revised the scheme, and wrote the text. In the revising condition, students wrote a 'discovery' draft, and reread, evaluated and revised the text using the same criteria as in the planning condition. Composing the discovery draft is a way of thinking about the content in writer-based prose; revising the first draft

Table 3. Distribution of cumulating learning contents over five instructional units

Learning content	Unit				
	1	2	3	4	5
To define and formulate the issue	+	+	+	+	+
To form and base an opinion on the issue	+	+	+	+	+
To introduce and to conclude		+	+	+	+
To inform		+	+	+	+
To quote			+	+	+
To argue				+	+
To signal argumentation				+	+

+ , present.

provides the opportunity to refine the text into reader-based prose, improving rhetorical and argumentative aspects. In the fifth phase, students read and commented on each other's texts in both conditions.

Testing materials

To measure the planning and revising strategies of the students, we implemented a writing questionnaire. We selected 22 items concerning planning and revising from a writing process questionnaire (Janssen & Overmaat, 1990) and administered the questionnaire before the course started. Table 4 shows 10 key items of the questionnaire. Students rated how much they agreed with each item on a five-point

Table 4. Five key items in the writing questionnaire indicating revising writing strategy and planning writing strategy, with mean score

Revising strategy	Before I hand in my text, I check whether it is convincing enough	3.48 (1.00)
	Usually I rewrite and revise my text at least once	2.88 (1.2)
	I read my text regularly while writing, to check whether I am satisfied with it	3.90 (0.69)
	Before I consider my text as finished, I read it again to be certain it is worthwhile for someone else to read	3.21 (0.94)
	While writing, I don't pay attention to whether I express my opinion clearly enough*	2.49 (1.00)
Planning strategy	When I'm going to write a text, I just jot down a few words and then I work up my notes into an essay	3.20 (1.34)
	I always make a writing plan before I start to write	2.18 (0.98)
	Before I start to write I think carefully about what I want to achieve and how I'm going to approach it	3.47 (1.03)
	When I'm going to write a text, I do not need to write down first what I think about the topic*	3.08 (1.15)
	I never make notes before I start to write*	2.93 (1.26)

Note. Items with * were recoded in the analyses. The more the student agrees with the items (on a five-point scale), the higher the scores on the revising writing strategy. Selection of items was based on best item rest correlations (varying from .40 to .69). Standard deviation in parentheses.

scale. We computed the scores on both the planning and the revising items, assuming that writing strategy is not unidimensional and that students can have mixed strategies (see Table 5 for internal consistency of the questionnaire).

Table 5. Quality of the testing materials

Dependent variable	Instrument	Number of items	Cronbach's α	Inter-rater reliability
Revising strategy	Questionnaire	15	.71	NA
Planning strategy	Questionnaire	7	.68	NA
Evaluation of courses	Questionnaire	8	.80	NA
Quality of learning	Evaluation of workbooks	33	.83	NA
Writing skill (pre-test)	Scoring argumentative texts	5	.61	.93
Writing skill (post-test)	Scoring argumentative texts	10	.73	.92

To measure writing skill, we administered a pre-test and a post-test, in which students wrote an argumentative text about a literary story. Four different stories were used, in a completely balanced design, to prevent a story-effect. Three independently working coders scored the texts on argumentative quality.

To check for other variables that could influence the results on writing skill, we measured students' appreciation of the specific revising and planning tasks in the course (by self-reported rating on a five-point scale) and students' participation (by evaluating the quality of students' workbooks). Quality of all testing materials is shown in Table 5. The first author attended all lessons and observed that the circumstances under which the lessons were assigned were good; students paid enough attention to the lessons and worked independently. Regular classroom diversions did not threaten the differences between conditions.

Analyses

To test the effects of condition and writing strategy on writing skill, we used analysis of covariance (ANCOVA). To partial out initial scores and aptitude scores, we included pre-test scores and aptitude as covariates. To compute the interaction effect of condition and writing strategy on writing skill with an ANCOVA analysis, we divided the scores for the variable writing strategy into two scores: the score in condition 1 and the score in condition 2. This means we created the variables 'planning strategy in revising condition', 'planning strategy in planning condition', 'revising strategy in revising condition' and 'revising strategy in planning condition'. In addition, we computed the beta-weight via regression analysis to indicate the direction and strength of the interaction.

Please note that due to two characteristics of the research design, differences between teachers in the implementation of the lessons are not likely to influence the differences between conditions. First, the lesson material was designed for independent working in the classroom by all students in both conditions. Second, the participants were randomly assigned to conditions within classes. So, differences in the implementation of the lessons do not threaten the differences between conditions.²

² We refrained from multilevel analysis as the variance between classes did not reach significance ($S^2 = 0.10$; $SE = 0.08$). For other variables (like aptitude, condition or track) no significant random effects could be shown.

Furthermore, all relations between writing strategy and writing skill were tested for non-linearity. None of them proved to be non-linear.

Results

Preliminary analyses

No initial differences between conditions in relevant variables were expected, because of the random assignment of participants to conditions. However, we tested initial differences to check that effects on the post-test are not attributable to initial differences between conditions. No differences between conditions were observed in planning strategy or revising strategy (respectively, $t(111) = -.05$, $p = .96$ and $t(111) = 1.34$, $p = .18$). General schooling aptitude was included in the design to avoid conclusions being drawn about writing strategy effects due to aptitude. No correlation was observed between aptitude and writing strategies (planning strategy $r = -.10$, $p = .31$, revising strategy, $r = .10$, $p = .28$) or between aptitude and pre-test ($r = .04$, $p = .67$).

A significant but small correlation was observed between the planning and the revising strategies ($r = .38$, $p < .001$). The smallness of the correlation validated our decision to compute both the planning and revising strategies.

With an analysis of variance (ANOVA), we tested possible differences between conditions, regarding the quality of students' learning and the evaluation of the lessons (see Table 6). For both conditions, no differences were found between the two implementation variables (variable quality of learning $F(1, 112) = 2.57$, $p = .11$ and variable evaluation of the lessons $F(1, 112) = .41$, $p = .52$). This implies the two versions of the course were generally appreciated equally.

Table 6. Means for quality of learning and evaluation of lessons per condition

Condition	Revising condition	Planning condition
Quality of learning	56.66 (11.45)	60.29 (12.60)
Evaluation of lessons	3.32 (0.70)	3.23 (0.71)

Note. Standard deviations in parentheses.

Main analyses

Our first hypothesis was whether the more strongly students tended to apply a planning strategy, the more they would benefit from the planning condition. Analysis of covariance of students' score on planning strategy and condition, on writing skill, with pre-test on writing skill and aptitude as covariates, resulted in a significant effect for planning writing strategy in the planning condition, $F(1, 111) = 4.40$, $p = .04$, $\beta = 0.30$. No main effect of condition was observed ($F(1, 111) = 1.10$, $p = .30$). The first hypothesis was confirmed: there is a positive relation between planning writing strategy and writing skill in the planning condition. Therefore, the effect of the planning condition depended on the level of planning strategy: the intervention resulted in higher scores on the writing skill post-test for high planners than for low planners (Figure 1).

Our second hypothesis was whether the more strongly students preferred a revising strategy, the more they would benefit from the revising condition. Analysis of covariance of students' score on revising strategy and condition, on writing skill, with pre-test and

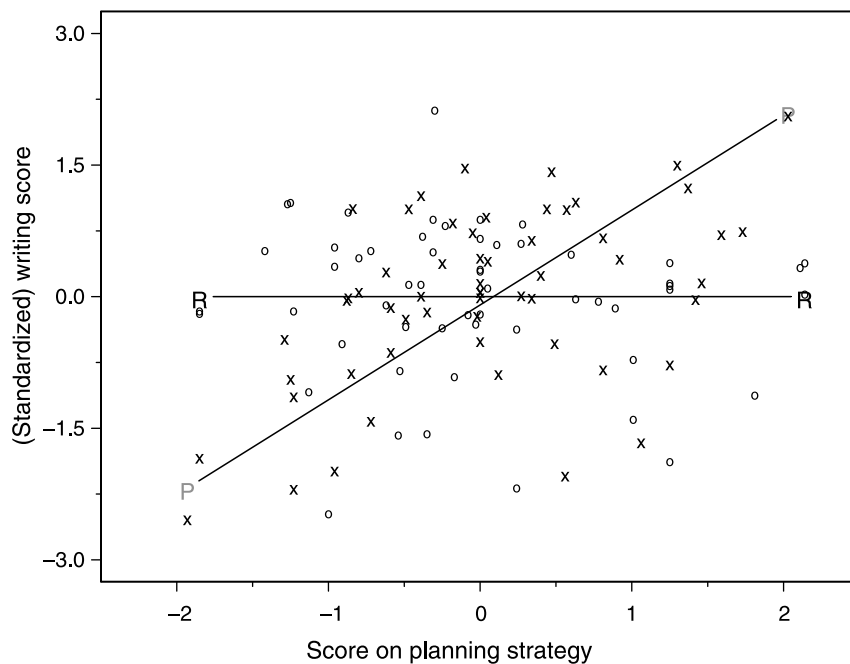


Figure 1. Scatter plots and regression slopes for effects of interaction between condition and planning strategy on writing score.

aptitude as covariates did not confirm our hypothesis. No significant effect was found for the revising condition ($F(1, 112) = .26, p = .61$) nor a main effect of condition ($F(1, 112) = 1.16, p = .28$). However, the analysis resulted in a significant effect for revising strategy in the planning condition, $F(1, 112) = 6.64, p = .01, \beta = 0.40$. In the planning condition, students with high scores on revising have high scores on the writing skill post-test and students with low scores on revising have low scores on the writing skill post-test (Figure 2).

Exploratory analyses

As not all of the results are as expected, some questions arise. An exploratory analysis may shed some light on our findings. First, how can we determine that students with a high score on the revision strategy benefitted from the planning condition instead of the revising condition? It could be that high revising students worked better in the planning condition than in the revising condition or that they appreciated the planning condition more. However, analysis of covariance showed that the score on revising strategy is not related to the quality of working in the planning condition ($F(1, 112) = .57, p = .45$) and that the score on revising strategy is not related to the evaluation of planning lessons ($F(1, 112) = .003, p = .96$).

Discussion

In this paper, we question whether the traditional planning strategy that is typically taught in schools, is necessarily the best way to teach writing. To answer this question,

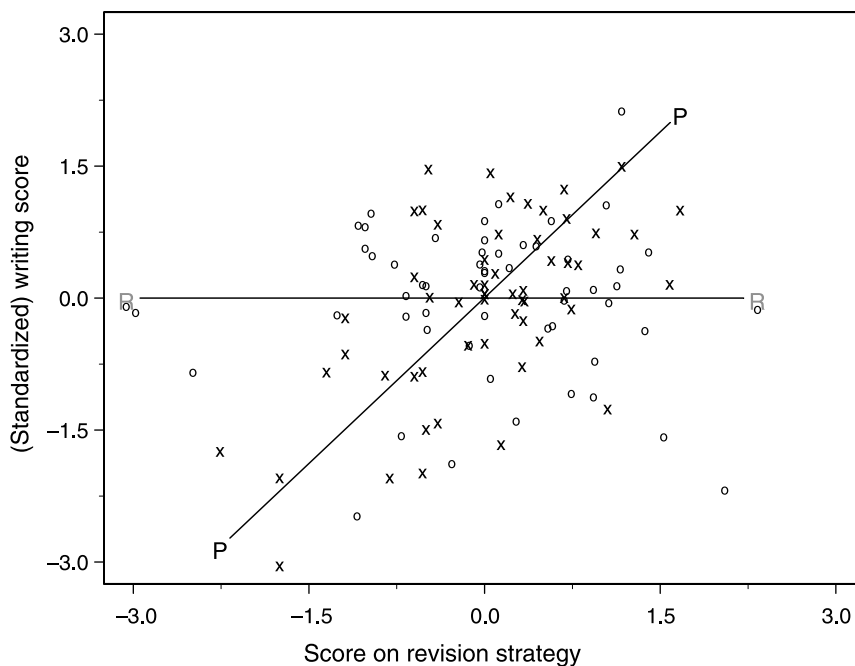


Figure 2. Scatter plots and regression slopes for effects of interaction between condition and revising strategy on writing score.

we studied the effects of two types of writing instruction: the first providing guidance in planning writing strategy, the second, guidance in revising writing strategy. We observed no differential effect of the planning condition or the revising condition we implemented; teaching the revising strategy generally led to similar results as teaching by the traditional method of planning. However, we hypothesized no main effect, but interactions between condition and writing strategy: participants reporting a relatively strong planning writing strategy would profit more from a planning condition, while participants with a relatively strong revising strategy would profit more from the revising condition.

The present experiment showed that the effectiveness of the planning form of writing instruction interacted with students' writing strategies. The higher students scored on the planning and/or revising scales, the better the results were in the planning condition. Performance in the revising condition, by contrast, was unrelated to individual differences: the results on writing skill in the revising condition were the same, irrespective of score on both writing strategies. These results imply that the planning condition is successful for students who tend to good planning and/or revising, while the revision condition gives rise to improved performance for students who tend towards low revising and/or planning. This may suggest that a revision condition could be effective for those with an undeveloped writing strategy, while a planning condition could be effective for those with a relatively developed writing strategy.

Contrary to our hypothesis, the revising writing strategy interacted with the planning condition: the higher the score on revising strategy, the better the writing performance in the planning condition. This unexpected result led us to reflect on

the revising writing scale. The planning and revising writing scales were positively correlated, albeit relatively weakly. *Post hoc* inspection of the items included in the revising scale suggests that this may result from the revising scale measuring not so much the extent to which writers redrafted their initial text, but rather the extent to which writers monitored their text while writing. Thus, the items receiving the highest weighting on this scale were 'I read my text regularly while writing to check whether I am satisfied with it' and (negatively scored) 'While writing, I don't pay attention to the question of whether I am expressing my opinion clearly enough'. By contrast, the item that most directly reflected redrafting, 'Usually I rewrite my text at least once' was on average a point of minor contention. In other words, we suspect that our revising scale reflects what Galbraith and Torrance (2004) called reactive revision - 'evaluating the extent to which the text satisfies the writer's pre-established goals' (p. 65). In their view, reactive revision is intrinsically related to a planning strategy, which would explain the correlation between our planning and revising scales.

Students with low scores on planning writing strategy, who do not impose goals on planning and text production, do not appear to benefit when they are taught a pre-planning strategy as in our planning condition. Indeed, despite the fact that they write just as well as students with high scores on planning and revising before writing instruction (as shown in the pre-tests), after instruction, they performed relatively the worst. Intuitively, a teacher might believe this group needs encouragement to learn to plan their writing. However, our results suggest that this would be a mistake. Instead, such writers should be allowed to produce text freely, as in the revising condition, and receive instruction on how to adapt what they have produced to the goals of the genre they are learning thereafter.

The results of this study might both affirm various findings of earlier studies on writing models, whilst at the same time leave some gaps in the theory. In addition to the earlier described studies reporting that the different components of the writing process do not seem to be connected (Berninger *et al.*, 1996; Torrance *et al.*, 1994, 1999; Whitaker *et al.*, 1994), we observed that planning strategy and revising strategy are only slightly correlated. This finding corresponds with the differences between competent writers described by Hayes and Flower (1980, p. 19). They distinguish different monitor configurations, each describing a global way in which the monitor organizes the interaction between the different components of the writing process, resulting in different ways of producing an essay. Our study supports their idea that writers divide and sequence their planning and revising processes differently and independently.

Second, a question arises as to whether writing instruction affects the planning and revising writing strategies. Where students who tend to low revising and students who tend to low planning seem to profit most from the revision condition, one may conceive that learners developed their writing strategy towards a revision or planning strategy. Therefore, despite illustrations of other research (e.g. Torrance *et al.*, 2000) stating that writing strategy is quite a persistent students' characteristic, in future studies we plan to administer the questionnaire twice, not just prior to course commencement as we did, but also after course completion.

Third, in this study we utilized writing questionnaires to measure students' writing strategies. Introspective self-reports of the writing process inevitably have limitations. Despite a cautious approach to the interpretation of the absolute values reported by students, we assume that possible variations between self-reported writing strategies and actual writing strategy are present in all students, in both writing strategies. Thus, a

self-reporting writing questionnaire can be useful for discriminating between groups. However, validation of questionnaire scores could also be undertaken. It might be worthwhile to use a keystroke logging programme such as Inputlog (Leijten & Van Waes, 2005) to gather writing process data as well.

Finally, as discussed in the Introduction, in earlier research (Berninger *et al.*, 1996), guidance in planning did not result in better writing performance. In the current study, it has been shown that guidance in planning may result in better writing performance for some students, after all, for example, students who developed a strong tendency towards a planning or revising writing strategy. We conclude that studying interactions between relevant learner characteristics and interventions could contribute to a more nuanced writing instruction theory.

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Received 26 November 2004; revised version received 1 June 2006