

PSYCHOLOGY AND THE TEACHING OF WRITING IN  
60 MINUTES

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## 1. INTRODUCTION

Dear colleagues,

In this presentation we offer a 60-minute journey through some empirical studies on factors that may facilitate the effective learning and teaching of writing. We will try to highlight some of psychology's contributions to writing pedagogy, focusing on the secondary school age range.

We will concentrate on three domains of writing research: writing processes, learning to write and writing-to-learn.

### SLIDE DOMAINS HEEN EN WEER

Our aim is to provide an overview of these domains and to infer consequences for the teaching of writing. Our overview is necessarily selective, because of the very large body of research since 1980. Obvious limitations of this overview are set by the research paradigms and our personal selections.

### SLIDE DOMAINS & DISCIPLINES

We will focus on cognitive and social-cognitive studies, disregarding motivational processes. Within the social-cognitive paradigm, we will limit ourselves to referential communication and observational learning.

We will start with a short presentation of innovative practice. Knowing that there is no one-to-one relation between research and practice, we choose to present this example, as something that happens, and that has particular qualities. Some of these

qualities will be uncovered in the next sections of the presentation.

## SLIDE: THREE INTERACTING DISCIPLINES

When preparing this talk I had to decide on the sequence of the topics I intended to cover. It was tempting to follow the deductive path of a scientific lecture. But given the time slot, just after lunch, I choose to leave that path and to start presenting a short video of a lesson in writing, for 12-year-old students in the Netherlands. So We start our journey in the land of innovative practice, - a video of a lesson in writing, for 12-year old Dutch students - and then move on to other fields: cognitive psychology, referential communication science, learning psychology and writing-to-learn studies.

### PART 1: TEACHING PRACTICE

#### 1. INNOVATIVE PRACTICE: THE YUMMY YUMMY TOFFEE CASE

(VIDEO)

The lesson series I am about to show aimed at learning to write, stressing the acquisition of pragmalinguistic knowledge: what makes text effective? The teacher tried to develop lessons in which young students themselves investigate text qualities, so that they acquire this knowledge and, in doing so, learn how to acquire this knowledge. She tried to avoid the knowledge transmission model, and instead focused on the already available but mostly implicit knowledge in students. In this lesson series, the teacher tried to cover all roles from our student participation

model: students as participants in communication (writers and readers) and students as researchers (observers).

The lesson series I will show you consisted of four lessons of 45 minutes. Participants are students in grade 7, the first grade of secondary education. I will present some video clips of the lesson series.

My aim, in presenting these lessons here, is to set the stage. I would like to ask you to note, while watching the clips, three to five key-elements of the lessons that could contribute in this or another form to learning to write. After we view the lesson series, I will present some research from various disciplines, and then we will discuss the lesson series: what could have been the effective key-elements? [dit is niet zo erg duidelijk; je hebt nl nog niet verteld dat de lessenserie heel effectief is gebleken in onderzoek]

*Start video (six clips of 30 sec.)*

Lesson 1: Writing argumentative letter (computer room). Teacher presents the case to all students

*(presenting on transparency): reading aloud*

*Monday, April 7 2003, 3rd period, lesson 1*

*Task: writing a convincing letter, version 1*

Imagine:

On the wrappers of the Yummy Yummy toffee bars, which you occasionally eat, you have seen that you can get two free cinema tickets.

The wrapper reads:

**SAVE FOR TWO FREE CINEMA TICKETS!**

This is what you must do:

On each Yummy Yummy toffee bar wrapper there is 1 point.

Collect 10 points and send these in a sufficiently stamped envelope to:

Yummy Yummy Toffee Bars Points Offer, PO Box 3333, 1273 KB  
Etten-Leur, the Netherlands.

Also include €0.39 in stamps to cover postage. Clearly write your name, address and postal code, and the free (FREE!) cinema tickets will be sent to your home as soon as possible.

This offer is open until April 15 2003.

It is April 7 2003. You have collected a total of 8 points, but you

cannot find any more bars with points. The bars in the shops have no points on the wrappers, but it is still not April 15. Thus, you cannot get your 10 points together.

Nevertheless, you wish to receive the two cinema tickets.

Therefore, you send your 8 points along with two complete wrappers without points.

Write a letter to enclose with the points and wrappers. Explain why you are unable to send ten points. Convince Yummy Yummy Toffee Bars that you want to receive the two cinema tickets and that there was nothing you could do to get ten points. Make sure that they send you the cinema tickets! Then address the envelope.

Note:

- This first version of your letter will be put in your folder.
- Save your letter on a disk.
- Print your letter and hand it in to me.
- Give me the envelope too.
- Send your letter to [braaksm@ilo.uva.nl](mailto:braaksm@ilo.uva.nl) (or give me your disk.)

Lesson 2: Board Meeting Yummy Yummy Toffee Bars

45 minutes:

Split the group into two groups:

Group 1: *Management board*, to select three out of 20 letters that win the cinema tickets (just three pairs of tickets left in stock...).

Parallel: Group 2: *Researchers*, to study the arguments the management team uses in the board meeting to select the letters.

Lesson 3: Presentation.

Prepare the presentation: 'Meeting' research group (15 minutes).

The students from the research group work on listing the criteria of the Yummy Yummy Toffee Bars board and write them on a poster. The Yummy Yummy board group is now the observation group and pays attention to the meeting process. Its members must make notes of what goes on.

Presentation: Research team presents a poster with criteria the management board discussed and used.

Management team presents the three selected letters, referring to the poster

Lesson 4: Rewriting/revision original letter (computer room). Evaluation.

SLIDE

READ TWO LETTERS ALOUD (Omar's first letter and the revised letter)

SLIDE

Results: two figures

SLIDE: EFFECT SIZES

Because of the enormous effect size for the researchers (figure xx), we tend to think that the research position in learning to write can contribute to learning to write.

These lessons require students to play different roles. First, they must be in a position to experience the effects of written communication. That is, they have to participate in communication. Secondly, they must act in the role of observer, of analyst. Both roles seem to affect learning-to-write processes. Creating situations in which students are involved in communicative pairs or groups is a first requirement for teachers and curriculum developers.

SLIDE: PARTICIPATION MODEL

## 2. META-ANALYSIS OF INSTRUCTIONAL VARIABLES

One research discipline to interpret the success of this lesson series would be; related research on effective interventions to improve writing. The one and only available source at the moment is the meta-analysis by George Hillocks, published in 1986.

He investigated which teaching method worked best, generalizing over all sorts of experiments with various educational content<sup>1</sup>. See Table 1 for a summary of the results:

Slide: Table 1

Effect sizes of four writing instruction methods

The interactional method is far superior to the other three teaching methods. Here, the teacher and students equally participate in the teaching/learning-process, with many instances of interaction, guidance, stimulation and feedback. In this way, students not only tackle the task itself, but also learn how to tackle the task. The interactional method stimulates thinking

However, as yet, in writing education little attention is paid to activities *preceding* the writing of an essay. Most teacher time is spent on commenting on the texts once they have been written, with a view to stimulate progress in a future effort.

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<sup>1</sup> Hillocks only selected studies in which writing was measured by means of whole text production.

SLIDE Table 2

Effect sizes of six characteristics of follow-up teaching in the composition instruction<sup>2</sup>

It is conspicuous that the most commonly used form of feedback, comments made by the teacher without a particular form of goal or objective known to the student, has virtually no effect at all<sup>3</sup>. If comments are based on clear goals, if the comments tie in with the objectives of the course as a whole or at that particular stage, the benefits increase.

Conclusion: teachers must ensure that goals are clearly stated and that the feedback fits the goals<sup>4</sup>, and they must enhance student involvement in feedback tasks.

The instructional content for teaching writing

Hillocks distinguishes six forms of content for teaching and learning to write:

SLIDE

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<sup>2</sup> The simple addition of a rewriting assignment based on the teacher's comments yields a mean extra effect of 8%; simply adding peer comments to the teacher's comments yields the same effect of 8%. Moreover, these effects can be greatly enhanced if clear goals for the assignment have been formulated.

<sup>3</sup> All sorts of experiments with this kind of feedback (many or few comments, intensive or sporadic feedback, comments written or spoken onto tape) produced no results.

<sup>4</sup> We know that this is a truism, but very often writing education is insufficiently oriented towards goals and tasks. Indeed, it often consists solely of a variegated collection of tasks.

Six teaching-learning contents in composition instruction: Effect sizes on writing ability.

SLIDE: table

All other teaching-learning contents are better than grammar-like composition instruction. Free writing<sup>5</sup> and models share the least successful category bar one. Sentence combining and text scales<sup>6</sup> are evidently more successful than grammar, free writing and models. Inquiry<sup>7</sup>, gathering and processing data is best of all<sup>8</sup>: again, this content choice is a choice that stimulates thinking.

SLIDE: SUMMARY HILLOCKS

Hillocks' explanation for the winners is that all effective learning contents target the acquisition of criteria for good texts. Comparing texts (in 'scales' instruction for instance) supports a growing awareness of what works in a text. The same holds for peer feedback with clear goals: once it is clear what to look for in peers' texts, the

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<sup>5</sup> Conceptualising while writing. Students write on subjects of their choice, to discover what they have to say and to recognize and develop their own styles. The texts are not assessed. The teacher and peers offer encouragement rather than judgement.

<sup>6</sup> Students applying assessment criteria to their own text, to texts written by peers, texts presented by the teacher, or some combination of these. The criteria are familiar to the students in one tangible form or other: they have applied them to texts of varying quality (hence the term 'scales' for this category of educational contents). Often students are invited to suggest possible revisions for texts they have assessed.

<sup>7</sup> Inquiry. Obtaining and processing data (e.g. literature) or content: the skills and strategies of dealing with data. Students are provided with objects and/or data, which they must use in carrying out assignments (either alone or with others): observing, analysing, categorizing, generalizing, hypothesizing.

<sup>8</sup> If students work in a class using these teaching-learning contents, an average of almost three quarters of the class will score better than the average in a randomly selected other class.

opportunity to acquire text quality awareness is increased. What is happening during this activity is building textual and pragmalinguistic awareness.

## PART II: PSYCHOLOGY AND THE STUDY OF WRITING

### 2. COGNITIVE PSYCHOLOGY: WRITING AS A MODE OF THINKING

To introduce the essence of writing, I would refer to Kellogg's assertion that writing is prototypical thinking. "(...) the study of writing as a window to theory of thinking"<sup>9</sup>. It requires mental effort and engagement. Thinking and writing do not simply unfold automatically and effortlessly in the manner of a well-learned motor skill, such as typing or riding a bicycle<sup>10</sup>. Writing a text demands *mindfulness* and *effortful engagement*: writers must monitor and evaluate how well thinking and writing is going. From secondary task analysis Kellogg collected data about cognitive effort in various tasks (page 17).<sup>11</sup>

SLIDE: [insert here figure 1.1. from page 17 Kellogg]

The results are clear: for undergraduates the three writing activities require as much effort as selecting a move for expert chess players.

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<sup>9</sup> (Kellogg, 1999, p. 16)

<sup>10</sup> (Kellogg, 1999, p16)

<sup>11</sup> Data were gathered during task execution (writing, reading, learning or playing chess). At randomly chosen moments, a tone was played and students should react to indicate that they perceived the tone (by pressing a certain key or so). The reaction time indicates the amount of effort involved in the task: the longer it takes the participant to react, the more involved she was.

### 3. COGNITIVE PSYCHOLOGY:

#### A CLOSER LOOK INTO WRITING PROCESSES

##### *3.1 General approach*

There is a relatively large body of research on the writing process, on the components of the writing process, and the relations between components. Major contributions were made by two duos, John Hayes and Linda Flower (at Carnegie Mellon, Chicago, in those days) and Carl Bereiter and Marlene Scardamalia (at OISE, Toronto). Hayes and Flower designed the well known Hayes and Flower model, updated by Hayes in 1996 (Hayes, 1996). Their approach came from cognitive psychology, and was inspired by Newell & Simon's book *Human Problem Solving* (1972). They applied the more general problem-solving model to writing, and applied the thinking-aloud methodology to writing processes. They also borrowed the expert-novice paradigm, to reveal the differences between novice and expert cognitive behaviour. Although their model encompasses all kinds of writing processes, the model is widely perceived as an expert model, a perception I do not share. [dit laatste blijft wat in de lucht hangen; hoezo niet?]

Bereiter & Scardamalia's model work, on the other hand, comes from experimentation, and fits in a cognitive developmental paradigm. Their central question is:

"Is writing basically the same process for beginners, with a few parameters set differently, or does it follow a qualitatively different mode? These are questions we have pursued through comparative studies of older and younger writers, writers of the same age, skilled and less skilled" (Preface, page xiv).

They pursued this question through comparative studies of older and younger writers, and skilled and less skilled writers of the same age. They concluded that mature and immature writers differ in the structure of the writing process. They designed two different models of writing; the complex knowledge transforming model, where content and rhetoric situation interact, and the simple knowledge telling model, a memory dump model, that leads to associative chains of content in texts.

“Expertise comes from subordinating the simple strategy to another that is a great deal more complex”(Preface, page xx).

### *3.2 What did we learn from writing process studies?*

There is not enough time to discuss these models in detail. So I recommend this book

SHOW BOOK ALAMARGOT & CHANQUOY TO AUDIENCE

for further reading, and will limit the excursion to some topics.

SLIDE: MODEL: PROCES, TEXT, PERSONALITY TRAITS, TASK COMPONENTS (INPUT/PROCESS/OUTPUTMODEL)

### *3.3 What constitutes a writing process?*

[insert about here table xx]

Finding 1A:

Which elements constitute a writing process? A limited set of cognitive activities is sufficient to explain the quality of the resulting text.

[SLIDE: LIST OF 11 COGNITIVE ACTIVITIES]

Finding 1B.

Secondly, time is an important factor, or the moment in the writing process at which an activity is performed. None of the activities were effective during the whole process; some contributed during one or two phases in the same direction (positively or negatively), some in reverse directions: positively in one phase, negatively in another (see table xx)<sup>12</sup>. In Figure 2, we present the correlations between the frequencies of two cognitive activities ('reading the assignment' and 'generating') and text quality at various moments during the writing process.

[POINTING TO SLIDE, AND CURVES]

'Reading the assignment' is positively related to text quality only during the initial stages of the writing process. During later stages, the correlation between this activity and text quality decreases and soon becomes negative.

The correlation between 'generating' and text quality also changes during the writing process. It increases during the initial phases and reaches a maximum in the middle of the writing process. to decrease during later stages.

-- INSERT FIGURE 2 ABOUT HERE --

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<sup>12</sup> If the moment an activity is employed is left out of the analysis, hardly any relation could be found between cognitive activities on the one hand and text quality on the other hand.

### 3.4 *Recent issues in writing process research*

Recently, one important issue is addressed in writing process studies; The interaction or co-operation between cognitive activities.

Whitaker, Berninger, Johnston & Swanson (1994), for instance, studied to what extent various components of the writing process were connected. In this study, primary school children (4<sup>th</sup> to 6<sup>th</sup> grade) performed a sequence of tasks, each [= representing? focussing on? demanding?] a particular component of the Hayes & Flower model (planning, translating, reviewing).

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Advanced planning: (five minutes)

Translating (writing): (five minutes)

Online planning task: when time was called, three sentences should be added, were rated for coherence

Post-translating reviewing: (seven minutes)

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Texts were scored for three levels of language:

1. word (frequency, indicating lexical access: less frequent words better than more frequent words),
2. sentence: complexity,
3. text: text organization (coherent discourse).

Two important results

1. Word, sentence and text skills are independent. Within the translating or reviewing task, no correlations were observed

between the three language level scores. At the same time, high correlations were found between task-score on the same language level (word: .84; sentence .77; text .84).

2. No relations were observed between the quality of planning and the quality of translating or reviewing.

From think aloud studies older students, we learnt that the co-existence and co-operation of cognitive activities do exist, which is an important finding, and that the co-operation is time-dependent. In other words,

SLIDE

Finding: Cognitive activities are functionally related

Finding: and again, these relations change during the process.

In Figure 3 the distribution of various adjacent pairs of activities is depicted, with generating as the second activity. All five combinations of generating activities have different patterns of distribution. This implies that the different combinations behave differently, indicating a functional relationship. If the combinations were just random adjacent pairs, the distributions over the process would have overlapped.

SLIDE: Figure 3<sup>13</sup>

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<sup>13</sup> Changes in the mean probability of occurrence (y-axis) of Assignment-Driven-Generation (ASDG), Rereading-Text-Driven-Generation (REDG), Translation-Driven-Generation (TRDG), Generation driven Generation (GEDG), and Pause-Related-Generation (PARG). Data from Van den Bergh & Rijlaarsdam (1999).

SLIDE: Figure 4<sup>14</sup>.

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<sup>14</sup> Correlation (y-axis) between occurrence of Assignment-Driven-Generation (ASDG), Rereading-Text-Driven-Generation (REDG), Translation-Driven-Generation (TRDG), Pause-Related-Generation (PARG), Generation-Driven-Generation (GEDG) and text quality during writing (x-axis). Data from Van den Bergh & Rijlaarsdam (1999).

The effect of functional pairs varies over time. Some functional pairs are more effective in the beginning of the process, others in a later phase of the process (Figure 4)<sup>15</sup>. This observation leads one to reconsider the unit of analysis for theory building. When combinations of cognitive activities behave as functional relations, then strings rather than single activities should be considered as the unit of analysis.

### *3.5 Writer variables influencing writing processes*

#### *3.5.1 Skills*

Finding 4A: Students ability in applying a cognitive activity (planning, revising) affects the number and effect of this activity positively.

Van der Hoeven (1997), in her study on writing processes of 11-year-olds measured revision skills with special, independent tasks. She found that revision skill was positively related to most other cognitive activities appearing in the writing-aloud protocols:; structuring, production of written text, re-reading, evaluating and transforming already-written text. The higher the student's competence in evaluating already-written text, the more instances of re-reading, evaluating and transforming were observed, and the better the resulting text.

Finding 4B: Level of skill affects the distribution of activities over the process.

Participants with low revision skills generated fewer ideas in the beginning of the writing process compared to participants with relatively high revision skills scores.

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<sup>15</sup> For instance, from Figure 4 it appears that the correlation between 'Translation-driven-generation' (TRDG) and text quality is time dependent. The correlation is significant in the first quarter (negative) and after (about) 25 minutes until (about) 75 minutes, where it is positive. After (about) 85 minutes, it reaches significance again, but now it is negative: the more this activity occurs during the end of the process time, the weaker the text.

While the number of ideas gradually decreased in the high revision skills group, this number increased in the low revision skills group. Students with high revision skills re-read, evaluated and revised relatively little in the beginning and more towards the end of the writing process. These findings suggest that the quality of revision – revision skill – is related to the way the writer organizes the writing process, and thus affects the quality of the resulting text.

Finding 4c: Skill in cognitive activities is not enough: the effect is in the implementation during the process.

Interestingly, the competence of evaluating already-written text was, in itself, negatively related with the quality of text. Only by employing writing process activities of revision was this negative relation changed into a positive relation. This implies that the skill itself is not sufficient; writers have to apply the skill when they write.

### 3.5.2 *Writer Variables: Personality Traits*

The most prominent research about the relation between personality and writing is located here in the UK, in Staffordshire, and is carried out by David Galbraith and Mark Torrance.

Galbraith tested the assumption that different writers perform better under different circumstances. He expected a difference between the writing process of *high self-monitors*, who control their expressive behaviour in order to present themselves desirably to others, and the writing process of *low self-monitors*, who express their affective state directly. Galbraith (1996; 1999) set up experiments that examined the

ways in which writers generate ideas to write about. Undergraduate students (both high and low self-monitors) either wrote an essay, without making a planning on paper, or made notes in preparation for an essay, without actually writing the essay. Galbraith found that high self-monitors produced more new ideas when they make notes in the planning phase, and low self-monitors produced more ideas when they write text. Thus, for discovery, writing without planning is useful for some writers and planning texts is useful for others.

SLIDE: Figure XX. Mean number of new ideas produced after writing as a function of self-monitoring and mode of writing (Galbraith, 1996: 129).

TO ADD LATER IN PAPER: Torrance (Marleen); Kellogg (text book).

### 3.6 *Task Variables that affect Processes*

Rau & Sebrechts (1996) studied different kinds of planning. Their main idea is that planning serves two different goals; ‘options expansion’, and ‘options resolution’. Undergraduate students performed a 30-minute writing task<sup>16</sup>. There were three planning conditions: no planning (immediate writing), silent planning (five minutes, no written planning) and outline planning (5 minutes).

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<sup>16</sup> Two tasks: ‘My favourite town’ or an argumentative task about a surrogate mother who wanted to break the contract she had made with a couple by keeping the artificially conceived baby she had agreed to give them

The results show a clear distinction between the two planning conditions.

	Outline planning	Silent planning
Pre-writing planning	Conceptual planning <sup>17</sup> : 59%	Conceptual planning: 13%
Online revisions		More content revisions during writing than other conditions
Online pauses		More time spent on pausing, indicating planning, than two other conditions
Text quality	no effect of planning conditions	

This experiment shows that writers adapt to the particular situation. Writers compensate for different starts during the online writing process. When writers can spend time on content planning, without much support to organise these ideas, they increase the numbers of options they have to resolve during writing. They pause longer, as an indication of content planning, and most of their revisions are content revisions. While writers who have the opportunity to organise their ideas, in the outline condition, show more conceptual planning during that pre-writing phase than silent planners. They not only generate options, but already start in the pre-writing phase with ‘options solutions’, while the silent planners delay the process of option

<sup>17</sup> Conceptual planning: process planning, rhetorical planning, structure planning (order and organisation). Content planning: content ideas.

resolving until the writing phase. Different processes, same quality of text.

### 3.7 *What do we learn from writing process studies: is it complex or is it complex?*

We only have access to the tip of an iceberg. The more we know, the more complex the writing complex seems to be.

#### SLIDE

- 1) 15 year old students show large differences in processes and in the effectiveness of processes. In one classroom we may encounter all kinds of interesting and relevant differences, which we can use when teaching writing.
- 2) Many paths lead to a good text. Writers compensate for less developed skills. Variation in instructional content and approaches is needed to build on strong developed capacities, and to develop weaker skills or strategies.
- 3) Not all students exploit the relevant cognitive activities: they must become aware of their existence and effect, and they must have opportunities to practice them.
- 4) Not all students launch the relevant activities at the appropriate moment. Students must experience what is effective at what moment, and they must understand the weak elements in their patterns of activities.
- 5) The *quality* of planning, generating, structuring, revision skills, play a positive role in writing processes and as a consequence on text quality. We must teach students these skills, and they must practice them in productive and complex situations. (No dull practising.)

- 6) Students must learn to guide and monitor their processes. They must build task schemes (Hayes, 1996). This requires practice and reflection.

#### 4. PSYCHOLOGY AND WRITING: REFERENTIAL COMMUNICATION STUDIES AND WRITING

##### 4.1 *Referential communication*

In the domain of referential communication, cognitive and social processes are combined. Writing is seen as a cognitive and social process. First, there is the cognitive task to decide what information to communicate and how to communicate it. This implies that a writer must coordinate two representations of the text: the communicative intent (what do I want to say) and the representation of the text produced (what have I written)? Those two representations interact, that is; the act of writing may affect the thoughts of the writer, and the text may take the writer on an unexpected track of thoughts, reasons, and arguments.

Additionally, writers must consider the context of the writing and for whom the writing is intended. This social task requires that writers construe a third representation of the text, the reader's perspective ('how will the reader interpret my writing?')

Holliway & McCutchen (2004) explored whether young writers would benefit from reading as the reader<sup>18</sup>. Writers participated in three 30 to 45-minute writing

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<sup>18</sup> A concrete experience like reading as the reader may help young writers begin to coordinate "what I want to say" and "what I have written" with "how my reader interprets my writing." (Holliway & McCutchen, 2004, pp. 93).

sessions. In the first session, all writers were given three tangram figures to describe

Second session: Each writer received a typed version of the descriptions they composed in the first session. Writers were randomly assigned to one of three perspective-taking conditions.

SLIDE: WEEKLY SEESION & CONDITIONS

*Condition 1 - Feedback only.* Writers were asked to revise their original descriptions.

*Condition 2 - Feedback + rating.* Writers received three descriptions written by other students and rated the descriptions on informational adequacy. They then revised their own descriptions.

*Condition 3 - Feedback + read-as-the-reader.* Writers were asked to read three descriptions written by other students and match descriptions with tangrams (a task identical to their readers' task). Writers then revised their original descriptions.

In the third writing session, writers composed descriptions for tangrams they had not previously seen.

Each set contained three separate groups of four similar looking tangrams (see Figure 1). Each group contained one "targetgram" and three distracters.

SLIDE Figure 1.Groups and sets of similar-looking Tangrams.

SLIDE: Results (in Effect Sizes) are shown in figure xx).

For both grades, the Read-as-the-Reader condition gained significantly in revising their tangram descriptions and writing descriptions for a new set of tangrams. Perspective-taking supports the development of writing ability.

Note that the rating-condition didn't work well: rating texts for adequacy didn't support the improvement of skill, except for new tasks in Grade five. The problem might have been that students didn't have a frame of reference to evaluate adequacy, while in the condition 'Read-as-the-Reader' students compared a written description with the object and the distracters, and then constructed a frame of reference.

#### 4.2 *Reading as the Reader & Experiencing the Reader (Video)*

A step further on the path of Referential Communication was set by Michel Couzijn<sup>19</sup>. Couzijn studied the effects of being confronted with real readers and reading-as-a-reader.

His question was: How do children develop knowledge about effective communication? His idea was simple: children should *experience* how communication works. One very strong communicative text type is a manual. Therefore, he constructed a simple physics experiment, trained children to perform this experiment, and write a manual.

The experiment was as follows (see Figure 13):

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<sup>19</sup> (Couzijn, 1995; Couzijn & Rijlaarsdam, 1996; Couzijn en Rijlaarsdam, 2004; Rijlaarsdam, Couzijn, Braaksma, Janssen & Van den Bergh, submitted).

First, you take an Erlenmeyer flask, you put a cork with a hole on the flask, and put a funnel in the hole. Then you put some water in the funnel. What happens? The water does not flow from the funnel into the Erlenmeyer. Why not? The air in the Erlenmeyer needs space and will not let the water in.

Then put a straw into the funnel, with your finger upon the top. Nothing will happen because the air cannot go away. But when you lift your finger, the air can flow out through the straw, and then the water will flow into the Erlenmeyer along the straw.

Couzijn did not give these instructions to the children, but he individually taught them how to perform the experiment. On a table several Erlenmeyers were present, different sizes, various corks, different sizes, and with holes of different sizes, and funnels and straws, in different sizes. Only one combination fitted best. He showed students the experiment, step by step, and added the physical explanations. Then he coached the student to do the experiment unassisted, until the student performed the experiment well. Ultimately, the student was able to carry out the experiment perfectly.

Then, students were asked to write a manual for a classroom peer. The manual should be so clear that the reader could perform the experiment perfectly. Couzijn collected the manuals, and asked other students, who didn't know anything about the experiment, to perform the experiment on the basis of a student manual, while thinking aloud. Couzijn videotaped their performances.

*Show text of a manual (transparency); Read text aloud.*

*Start: Video playing: [Here I show you a short fragment of such a video, 2.30 minutes*

*Parallel on OHP transparency: Protocol student on video Physics experiment (TA = test assistant)*

All the problems a reader can have with a manual came up in a natural way.

Three weeks after the writing session, the writer was shown two of his readers on video. Most writers were a little shocked when they saw their readers at work,. Then, the student received his or her original text, with the request to rewrite or revise it.

He measured the quality of the manuals resulting from various conditions. Seeing your reader at work had an enormous effect on the quality of the final manual.

Figure 13 presents the results of several conditions in which students rewrote their first version after having been exposed to readers' processes on video<sup>20</sup>. The condition in which writers saw their own text processed by readers, with written comments in addition, outperformed all other conditions.

. Couzijn asked all students to write a letter of advice to a new classroom mate, about how you should write a manual. With this measurement, Couzijn tried to assess the knowledge about the manual as text type, and to find differences between

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<sup>20</sup> *Some saw the readers of their own text, some saw readers of texts written by other writers, some having access to written comments by readers, some not having this kind of extra support. All three reader-observation conditions scored significantly better than the first versions and the first versions/rewriting conditions.*

conditions. To illustrate the use of this score form, we present two letters of advice and their scores.

#### TWO TRANSPARENCIES ON OHP, PARALLEL.

Couzijn showed that a relatively simple instructional device may have large effects. Show writers a video. From viewing this, young writers are capable of deducing knowledge about a good text: they can build a set of criteria for a good text, and they can apply these criteria. *Observing* processes, and *commenting* on communication, are both learning activities that contribute in a specific way to the learning gain.

#### 4.3 *Learning to communicate: by being a participant, by being an observer*

In the 1980s, Sonnenschein & Winterhurst reported a series of interesting studies. One feature they studied was the effect of being an observer of communication on referential skills. They were interested in the transfer of listening to speaking and vice versa. They hypothesized that a lack of transfer between the two roles may be attributed to a lack of metacommunication, which is a more abstract skill than speaking or listening. Observation of speakers and listeners in communication tasks would result in metacommunicative knowledge, which will influence the speaking and listening skills. Conversely, being trained in a speaker's or listener's role will not transfer to the complementary role, nor to a higher order skill like critiquing communication.

#### SLIDE CRITIQUING MODEL

S&W implemented a referential communication task: speakers had to describe one triangle from a pair so clearly that the listener (a doll in this case) could identify the

triangle correctly. In the listening role, students listened to the doll referring to one of the triangles, and had to decide whether they could identify the triangle, or that the message was not clear enough.

In one condition, the participants played the listener and the speaker roles: they were participating in the communication. In the other conditions, participants observed two dolls playing the game, and had to decide whether the listener could distinguish the triangle or not, and had to decide whether speaker, listener or both were correct. The conditions vary in some respects:

1. In one condition, participants had to observe and to evaluate both partners, and got feedback on their trials.
2. Same, no feedback.
3. In one condition, participants had only to observe both partners, no evaluation task, feedback provided
4. In one condition, participants had to observe and to evaluate the listener or the speaker only, and got feedback.

As learning and transfer tasks, 'speaking skill', 'listening skill' and 'commenting on others' performance' were measured. This last task consisted of a series of observations of speakers as well as listeners, with the question whether the performance of each of them was correct or not.

Results: From a transfer perspective, conditions with almost horizontal lines (speaking and listening and critiquing are almost at the same level) are interesting to discuss. The most striking result was that observation and evaluation of both speakers and listeners – the complete communication – resulted in very high scores on all post-tests: the performance of speaking and writing tasks and the evaluation

tasks. Observation of both roles without giving evaluative comments, however, yielded much smaller effects. Observation of only one role, either speaker or listener, yielded large learning effects, but no transfer effects, neither to the complementary mode, nor to the commenting tasks.

#### SLIDE RESULTS (3 TIMES)

The researchers conclude that speaking and listening tasks are 'subordinated' to the commenting or evaluation task, in the sense that the student who masters the commenting task appears to master the speaking and listening tasks as well, but not vice versa. Moreover, they conclude that an effective acquisition of speaking or listening skill can be obtained by observation and evaluation of others performing such tasks.

This study gives some important hints for effective learning activities:

1. Intermodal transfer is not obtained by training in, or observation of, one group only, neither to the complementary communicative skill, nor to the commentary skill.
2. Learning and transfer effects increase dramatically if the subject does add an evaluation the observations<sup>21</sup>.

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<sup>21</sup> We may conclude that some kind of information processing or labelling is desirable to make the observations meaningful. This 'making meaningful' may be all the more important since the subjects are not personally involved in the communication: they are outsiders, looking in.

PART III: PSYCHOLOGY AND THE STUDY OF LEARNING TO WRITE:  
LEARNING PROCESSES

Having considered the intricacies of writing processes and the remarkable results from referential communication studies, some contours of writing pedagogy emerge: observation of writers and readers can affect writing proficiency. Can we learn more from psychology about learning processes for writing when we concentrate on observation?

Arthur Bandura has transformed behaviourists' insights into social cognition since the sixties. Two of his followers, Dale Schunk and Barry Zimmerman, developed his theory of observational learning further, and applied it to a range of academic subjects including writing<sup>22</sup>. I will present here a recent study published in 2002 by Barry Zimmerman and Anastasia Kitsantas<sup>23</sup>

Schunk & Zimmerman (1997, Zimmerman 2000, 2002) developed a social model of sequential skill acquisition. This model claims that learners can acquire new writing skills optimally in four sequential levels. Here we concentrate on the first two levels.

1. Observation: observational learning is the process through which information is obtained from watching models' actions, hearing their descriptions, and discerning their consequences.

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<sup>22</sup> See for instance Schunk, D.H. (2000). *Learning theories (3<sup>rd</sup> edition)*. Upper Saddle river, N.J. USA: Prentice-Hall.

<sup>23</sup> Zimmerman, B.J., & Kitsantas, A. (2002). *Acquiring writing revision and self-regulatory skill through observation and emulation*. *Journal of Education Psychology*, 94(4), 666-668.

2. Emulation: novices can learn to enact a model's performance; they have achieved this level of competence when they can emulate the general form of a model's skill.

Then two levels follow: Self-control<sup>24</sup> and Self-regulation<sup>25</sup>.

Authors studied the effects of the modelling and the practising level separately on complex sentence combining. Students had to combine kernel sentences into one coherent non-repetitive sentence.

SLIDE: example kernel sentences

Example:

SLIDE

Successful solution:

The strategy taught was the following sequence (p. 662):

SLIDE:

A five-step solution strategy was presented on a written handout:

Observation phase

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<sup>24</sup> Students learn from self-directed practice to achieve automaticity in their behavioural technique. To attain this level of proficiency, observers must compare their creative effort with personal standards acquired previously from a model's performance.

<sup>25</sup> Students learn to adapt their performance to changes in internal and external conditions. They must shift attention from modelled processes to performance outcomes (reader responses, for instances).

Three conditions were distinguished. In the no model condition, students were confronted with nine problems on an OHP, and were invited to study them. In the mastery model condition, the participants observed an experimenter, solving the nine problems without errors on the OHP. In the coping model condition, the participants observed an experimenter solving the same nine problems, making errors in the beginning but gradually reducing the number of errors.

#### Practicing phase

Students had to solve 12 problems, individually. Half of the participants got feedback after each item, half of them got no feedback. Feedback was focused on strategy steps they performed properly (positive feedback).

The results were striking. Observing a model resulted in far better scores, where the students who observed a coping model outperformed those who observed a mastery model.

The effect of Feedback in the practice phase was also significant (main effect, no interaction with model condition)

## SLIDE: EFFECT TYPE OF MODEL

In terms of effectsize both the coping model and the mastery model condition had a large effect compared with the no model condition. The coping condition had an extra large effect compared with the mastery model condition.

When we add the effect of the second phase – practising – to the model effect (figure xx), it seems that the practising effect varied over the model conditions: the coping model participants, already scoring in the highest regions after the observation period, gained in the feedback condition far more than in the no feedback condition. The main effect of practising was about 0.52 effect size, small (0.25) in the no feedback condition, medium (0.77) in the feedback condition.

The correlations between the observation phase and practise phase scores were very high (.90), which indicates that the effect of the observation phase predicted the result of the practising phase very strongly.

## SLIDE: EFFECT OF PRACTICE

This is a very interesting result: without any writing in the observation conditions, proficiency in writing was enhanced!

This experiment may be open to criticism. It is may be a good exercise to combine various sentences into one sentence, but is this really writing? There is no communication, no writer, no reader.

Another critique is the deductive sequence: the strategy is given, sequence of actions is frozen; strategy is not 'invented' or construed by learners, conditions for application are not varied.

So the question is whether observational learning is also applicable in situations with more complex strategies, with more variance between learners/writers. Can students build these more complex strategies themselves, so that they not only develop the strategy for writing, but also practice how to acquire a writing strategy – 'learning to learn paradigm'<sup>26, 27</sup>?

We present a second research example, with observational learning as the key element. In this example, students observe and evaluate writers or readers. Models observed are peers, videotaped during learning to write moments. The learning sequence is still deductive: students read about a strategy, observe, compare and evaluate the learning behaviour of two peers executing the strategy, and then move to another strategy.

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<sup>26</sup> Bonset, H. & Rijlaarsdam, G. (2004). *Mother Tongue Education (L1) in the learning to learn paradigm: creative redevelopment of learning materials*. *L1-Educational Studies in Language and Literature*, 4, 35-62.

<sup>27</sup> (Weinstein, xxxx; Bonset en Rijlaarsdam, 2004)

## 5. LEARNING TO WRITE AND READ FROM OBSERVATION (VIDEO)

### 5.1 *Learning and transfer effects for writing and reading*

In a series of studies, we taught thirteen to fifteen-year-olds to write argumentative texts.

In the first experiment, students got four lessons on argumentative writing. In the traditional condition, students read some theory, checked their knowledge via a quiz, and then applied the theory in short writing tasks.

#### SLIDE

In the experimental condition, students did not execute these exercises, but watched on video how two peers fulfilled such a task. They had to choose which of the two executed the task the best and had to explain their choice. These two conditions were also implemented for Reading Argumentative Texts.

#### SLIDE

In one of the lessons, students learned to write an argumentative text from an argumentative scheme like the one on this slide.

Then, students got the assignment:

#### SLIDE

“You will see two students on video who tried to write a text based on this scheme. Watch the video, and explain which one did a better job.”

STOP PRESENTATION; START VIDEO PLAYING

SLIDE

*Transparency, parallel with video on OHP: The protocol of the student on video.*

Dependent variables were Writing and Reading Skills.

SLIDE

It turned out that observing other processes caused a larger learning gain than executing the exercises yourself, for writing as well as for reading. Observing Writing had an effect of .78 standard deviation compared with Practicing Writing. The effect for Observing Reading on Reading was 1.00 standard deviation.

SLIDE

The transfer effect from Observing Writing on Reading was enormous (.92) (We took Practicing Reading as Basis).

SLIDE

We may conclude that observation of writing is sometimes more effective than writing itself, and that observing writing has a large transfer effect on reading.

In subsequent studies on the effect of observation, Martine Braaksma found that students especially learnt by providing arguments for the claim which of the two writers did a better job than the other. In addition, in a study in which she closely observed the observational behavior of students, we learned that indeed students are building their own mental solution before choosing which student did a better job.

## 5.2 *Individual differences*

In other studies, we investigated whether instructional factors interact with learners' characteristics and whether observational learning affected the writing processes, as one may assume when meta-cognition was affected by the learning condition.

To start with the first issue, the question was: is it better to focus on a weak model, who makes mistakes, or on a good model, who processes the task in a better way?

SLIDE: cartoon

The answer is: it depends. It depends on the learner's proficiency level.

SLIDE

Weak writers:

1. A weak writer acquires a new task by comparing two students ('models') who are performing the task, focusing on the weaker student;
2. When the task is not new any more, weak students learn also from performing the task themselves.

Good writers

3. A good writer acquires a new task by performing the task himself, or by observing a pair of students who perform the task, focusing on the good writer in the pair.
4. When the task is not new any more, the good writer doesn't learn from performing the task, but by observing a good writer in a pair of good and weak writers

Slide: Interaction Effects

For students with a medium aptitude, we found no significant differences between conditions. But students with a low aptitude learned more in the observation/weak-focus or direct-writing condition.

Students with a high aptitude learned most in the observation/good-focus condition and in the practicing condition.

5.3 *Effect on writing processes (Braaksma)*

In another experiment we used the same learning tasks, implemented the same procedures, but now, we measured the effects of the conditions on *writing processes*, using think-aloud protocols. We return for a moment to the first part of this talk, to writing processes.

The following slide illustrates the differences in orchestration due to instruction.

SLIDE: Analysis & Goal Orientation

For two activities, goal orientation and analysis, the distribution of these activities over process time is more complex in the observation condition than in the control condition.

SLIDE: summary table plusses & minuses

Compared to the control condition, the configuration of cognitive activities in the students in the observation conditions was more complex than the configuration of

the students in the control condition, with more planning all over the process, and more analysis and less transcribing in the beginning than in the control condition.

## PART IV: PSYCHOLOGY AND WRITING AS LEARNING ACTIVITY

### 3. THEORETICAL SUPPORT

There is a strong movement, especially in the Anglophone world, that writing contributes to learning. Starting in the 1960s in London, with the work of James Britton and colleagues, who advocated that in the act of spontaneous, expressive writing, tacit knowledge was generated and therefore being known by the (young) writer. This insight influenced a number of scholars in the USA. The movement is called Writing across the Curriculum (WAC) and new labels are concurring (WID: Writing in the Disciplines; CAC: Communication across the Curriculum; CWAC: Creative Writing across the Curriculum)<sup>28</sup>. At first sight, it may be a little weird to expect that writing could serve as a learning activity, as writing is a difficult process, and as learning to write takes much time and effort. So why use the act of writing or the act of text production as a learning activity?

The psychological theoretical support for the claim that one learns when writing, and under what conditions one may learn from writing, is scarce. The most recent deep analysis of the often implicit assumptions in writing-to-learn studies was delivered by Perry Klein (1999)<sup>29</sup>. His question was not if writing contributes to learning, but ‘When writing contributes to learning, how does it do so?’ (p. 206). He collected claims from several studies, and classified them into four broad hypotheses;

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<sup>28</sup> See the Wac Clearinghouse site: <http://wac.colostate.edu/index.cfm>

<sup>29</sup> Klein, P.D. (1999). *Reopening inquiry into cognitive processes in writing-to-learn*. *Educational Psychology Review*, 11(3), 203-270

1. Shaping at the point of utterance: the learning is in the discovery when writing freely; expressive, not transactional.
2. Forward search: this is the process through which writers recursively review drafts of their texts to transform their ideas iteratively (p. 221).
3. Genre hypothesis: assumes that genre requires students to process information deeply and to construct relationships among ideas, thereby attaining increased understanding and recall of curriculum material (p. 230).
4. Backward search. The writers' rhetorical goals inform the selection of content goals, which in turn inform the selection of operations to transform content.

In a recent meta-analysis, Bangert-Drowns, Hurley & Wilkinson (2004)<sup>30</sup> report a summary of effects of 46 studies. The average effect size proved to be small (median: .20; range from -.077 until 1.48).<sup>31, 32</sup> Significant was the contribution of metacognitive prompts: when treatments included prompts requiring students to evaluate their current understandings, confusions, and feelings in relation to the subject matter, the effect size was significant larger (.09 versus .26).

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<sup>30</sup> Bangert-Drowns, R.L., Huley, M.M., & Wilkinson, B. (2004). *The effects of school-based writing to learn interventions on academic achievement: A meta-analysis*. Review of educational research, 74(1), pp. 29-58.

<sup>31</sup> Treatment effects were correlated with treatment length ( $r=.33$ ). Time per writing assignment ranged from 3 to 55 minutes: longer assignments were related to less positive effects ( $r=-.70$ ). This might be caused by lower motivation, because writing is tough, especially for weaker writers, and/or by less time on spent on coverage of course content.

<sup>32</sup> The number of assignments was not related to effect size. Whether the treatment contained personal writing or not did not affect the effect size, nor did the presence or absence of feedback.

#### 5.4 *Individual differences*

It is remarkable that in the Writing-to-learn paradigm no attention is paid to individual differences. We know from studies on writing processes and from Galbraith's studies of different types of writers, that individual differences do count. It seems unreasonable to expect that one of the approaches, put forward by Klein would work for all types of writers. While low self-monitors might gain by writing ('shaping at the point of utterance' hypothesis) and forward search (drafting, revision, redrafting), high-self monitors might gain by backward search processes. Marleen Kieft studied the effect of writing styles on learning gains in writing about literature, and found an interaction between writing style and condition. Learners (16 years old) with a low planner/engineer style of writing are better off with a planner style when we implement writing as a learning tool. For students with high scores on Engineering style, a planning or a sculptor condition is equally effective.

#### SLIDE: EFFECT ON LEARNING

Note that the effect of writing style works differently on writing skill: learners scoring high on engineering writing style are better off with the sculptor condition; low-scoring engineers should attend the engineer condition.

#### SLIDE EFFECT ON WRITING

### PART V: CONCLUSIONS

Dear colleagues, time is up, the tour is over, even for such an intriguing subject as writing and the teaching of writing, and with such an involved audience. Let me conclude with listing some of the points I would like to have settled in your mind in these 60 minutes.

Writing is a complex activity, with interacting components. Various cognitive activities can fulfil different functions, dependent on the context in which they operate. When we *study the writing process*, we must try to find methods that take into account:

Writing processes:

- we gained far more insight, and generated far more and better questions.

Writing is indeed a complex process.

When we *teach writing*, a few new insights could be exploited [? ].

Let's first return to the very beginning:

the Yummy Yummy toffee bar case. You have written down three or more features of the lesson series that could attribute to the learning gain. If you review this list, would you now add or delete items?

[waiting for audience].

Who would like to share what he/she had written down? Would you make any changes in your list? What changes?

Here are my features:

- 1) create observation/inquiry tasks:
  - a. observation of the effect of text on readers (Physics experiment, Yummy Yummy bars)
  - b. observation of student-writers in learning conditions

- 2) be aware of the interaction between learner characteristic and learning task:  
sequence: compare weak/good writers (focus weak), practice, compare  
weak/good writers (focus good).