Observe and explore: empirical studies about learning in creative writing and the visual arts

Groenendijk, T.

SUMMARY

The creative process as reported in this thesis refers to all cognitive and physical activities (including pauses) taking place between the moment one starts reading the creative assignment and the moment the final product is considered finished. We focus on secondary school students´ creative processes in doing art work (poetry writing, collage making, designing), the quality of their creative products (poems, collages, designs), and on the effectiveness of observational learning for improving both students' creative processes and creative products.

The thesis contains 6 chapters: an introductory chapter (chapter 1), followed by three reports of empirical studies (chapters 2, 3 and 4), and two discussion chapters (chapters 5 and 6).

CHAPTER 1

In chapter 1 we introduce the thesis with a short description of the mini-c creativity perspective (Beghetto & Kaufman, 2007). Mini-c creativity is a process understanding of creativity; it is about creativity taking place at the cognitive level and includes, for example, decision making processes or discovery processes located within a task execution process. Mini-c creative processes are the bases for observational learning videos.

In the thesis we describe two experimental studies on observational learning. Observational learning is learning by observing others, peers in this case, at work. We presented the thought processes of peer models to the students by means of video. The peer models in the videos thought aloud, externalizing their thought processes during the production of artistic creative work. An example of such an observational learning video is presented in chapter 1.

Subsequently, we briefly discuss the relevance of implementing observational learning in secondary art education. We argue that observational learning may stimulate both creative processes and creative products. Learning to engage in creative processes and learning about the creative process are the central learning content in upper secondary art education. As observational learning is a process oriented instruction method, it may offer an alternative to having students write reflection re-

ports. Reflection reports are generally thought to enhance process awareness, but they are sometimes considered meaningless by students.

In chapter 1, we outline the organization of the thesis and the content of the chapters.

CHAPTER 2

In chapter 2 we report on an empirical study about students' creative processes in poetry writing and the relationship between students' writing processes and the quality of the final poems. As the final purpose of the thesis is to test the effectiveness of observational learning, we first needed to examine the effective components of the creative process to be modeled in observational learning videos. From this perspective the study in chapter 2 was carried out.

In the study we describe the creative processes of 19 eleventh grade students in secondary education who write two different poems. The writing processes of the students were recorded by Inputlog, keystroke logging software which registers all keyboard and mouse activities. Afterwards, the students were interviewed about the tasks and about their task approach.

The process data were coded per 5 second time interval for text production, pausing and several types of revision. A factor analysis revealed different patterns of writing behaviour: different students distributed their writing activities differently over the writing process. In addition, processes differed with regard to linearity. A process was considered to be linear if the text was written in the same order as it was presented in the final poem. We found that non-linear writers were often students who revised their poem extensively. Linear writers produced the text in a linear way and appeared to revise less. Linear and non-linear writers verbalized their approach and task definition differently. It seemed that the writers who revised and wrote in a non-linear way, solved a more complex problem than the writers who wrote in a linear fashion and wrote down directly whatever occurred to them without further revision.

Subsequently, we related the processes to the quality of the poems. The poems were scored for holistic quality by seven independent raters in accordance with the principles of the consensual assessment technique (Amabile, 1982). Better poems were generally preceded by much production of text at the start of the writing process and many large scale revisions (entire verses) at the end of the process. Pausing and small revisions (character level) did not appear to contribute to the quality of the poem.

CHAPTER 3

In chapter 3 we describe the first (double) experiment on observational learning, carried out in two different domains: verbal and visual: poetry writing and collage making. We hypothesized that observation would have a positive effect on performance, creative process and intrinsic motivation, task value and self-efficacy. Fur-

thermore, we expected similarity in competence between the model and the observer to influence the effectiveness of observation positively.

Two experiments with a pre-test post-test control group design were set up to test our hypotheses. A total of 131 Dutch students (10th grade, 15 years old) participated in both the poetry and the collage experiment. Participants were randomly assigned to one of three conditions: two observational learning conditions and a control condition (learning by practising). The observational learning conditions differed in instructional focus (students were asked to focus either on the weaker or on the more competent model of a pair to be observed). In the experimental conditions, students watched videos and answered evaluation questions about the behaviour of the models in the videos. In the control condition students practised the same tasks as the students in the experimental condition watched in the videos.

We constructed observational learning videos on the basis of literature of creative processes, our first study on poetry writing and actual student behaviour. Pre- and post-tests included poetry writing and collage making tasks. The poems and collages were scored for creativity by three independent judges. Students' poetry writing processes were registered by using keystroke logging, software which records all keyboard activities. The number of images cut out from magazines but unused in final products was used as a revision measure in the collage processes. We used a questionnaire to measure intrinsic motivation, task value and self-efficacy.

We found positive effects of observation on creative products, creative processes and task value in the visual domain. In the verbal domain, observation appeared to affect the creative process, but not the other variables. Students revised more at post-test, but this did not result in more creative poems. The model similarity hypothesis was not confirmed: we did not find a significant interaction of students' initial capacity and the effectiveness of the condition for any of the domains. The results suggest that observation fosters learning in creative domains, in particular the visual arts.

CHAPTER 4

In chapter 4 we report on a second experiment on observational learning. In this experiment just one domain was involved (visual art making): students were asked to produce a product design for a charitable organization (for example Greenpeace). We hypothesized that observation has a positive effect on creativity measured in the product and the divergent activities in the designing process.

61 Dutch students (9th grade, 14 years old) participated in an experiment with a pre-test post-test control group design. The students were randomly assigned to one of two conditions: observational learning versus a direct strategy instruction condition with process guidance and practice (based on Sapp, 1995). Students in the observational learning condition watched videos of peers solving design tasks while thinking aloud. Both relatively weak and strong peer models were shown in the observational learning videos.

The students were pre- and post-tested on a design task. The process measure used in this experiment was based on Torrance, Fidalgo, and Garcia (2007), a self-reporting instrument based on time sampling. We used learner reports (De Groot, 1980) to measure students' learning experiences. Furthermore, a questionnaire on intrinsic motivation, task value and self-efficacy was used as an implementation measure in order to check whether the conditions were equally motivating for students.

Three raters scored the designs created by the students for creativity and technique. We expected a positive effect of observation on creativity, but not on technical quality of the designs. Results indicated that observation had beneficial effects on creativity of students' design products and some divergent processes, compared to the direct strategy instruction approach. In general, students in the experimental condition brainstormed more and produced more creative but not technically better designs at post-test than students in the comparison condition. Students with more prior knowledge had higher task value scores after practice, whereas they tended to sketch more after observation. Students with less prior knowledge had higher task value scores after observation, but they were encouraged to sketch more by practice. Students in the experimental condition reported more process learning experiences, while students in the comparison condition reported more product learning experiences. We conclude that observational learning enhances creativity in design products and processes. After observation students are more process oriented.

CHAPTER 5

In this discussion chapter we summarize the main findings from the empirical studies and compare the two experiments (described in chapter 3 and 4) with regard to methodological decisions and implications for internal and external validity. Subsequently, we discuss opportunities for future research.

The main differences between the experiments in chapter 3 and 4 are summarized in table 1. We conclude that, in general, internal validity was higher in the second experiment as it took place in a very controlled environment: at the research institute. However, external validity was secured better in the first experiment as a more diverse group of students participated in regular classrooms. As the results of both experiments point in the same direction, the two studies appear to reinforce each other with regard to validity.

In both experiments, different decisions were made regarding tasks, video construction and assessment procedure. These decisions and the implications are made explicit in the chapter. We elaborate on measurement of creative performance throughout the dissertation. In general, measuring creative performance is seen as very complex. The consensual assessment technique (Amabile, 1982), however, provides a workable methodology. We indicate for what reasons and in what ways we decided to diverge from the consensual assessment technique. We conclude that the assessment of creative products was feasible.

Then we describe how research on observational learning in arts education could be extended by studying other outcome variables such as process knowledge, reflection skills and skills in verbalizing about creative processes. It can also be extended by studying learner characteristics and implementation in real classrooms. We conclude that intervention studies aimed at enhancing creative processes and products in art education are rare. We hope that this dissertation may provide inspiration for more such studies.

Table 1. Two experiments on observational learning: similarities and differences

	Experiment 1 (Chapter 3)	Experiment 2 (Chapter 4)
Artistic domains	Verbal and visual	Visual
Participants	All students from 6 classes From 3 schools N=131 10th grade Random assignment to conditions	Volunteers 1 School N=61 9th grade Same
Setting	Regular CKV[8] classes, school	Research institute, during free time
Learner characteristics	Initial level (pre-test score), verbal IQ	Prior knowledge
Comparison group	Practice condition	Practice with direct strategy instruction
Treatment	2 experimental conditions (observational learning with focus on weak model and focus on strong model)	1 experimental group (observational learning)
Observational learning videos	Strong and weak models (all presented in pairs) Role played scripts Scripts based on spontaneous student behaviour	Strong and weak models (some presented in pairs) Fragments from authentic videos Videos were collected when students performed guided tasks
Evaluation task (after watching video)	Identify strong or weak model (depending on condition), and elaborate: explain choice	Various evaluation and elaboration questions
Product measures	Poems and collages	Design tasks
Assessment procedure	Ratings of creativity Use of anchor products	Ratings of (1) creativity and (2) technique Use of anchor products
Process measures	Indirect measures, on line (poetry), off line (collages)	On line, time sampled self-report

---

[8] *CKV= 'Cultural and Artistic Education', compulsory subject in Dutch secondary education. It includes many artistic domains, such as: visual arts, dance, drama, music, architecture, literature, cinema, etc.*

CHAPTER 6

In this final chapter we elaborate on the processes in visual art production which should be rendered in and stimulated by observational learning videos. We observed that stronger students worked more dynamically: they were more in interaction with the work–in-progress. Their ideas influenced the work-in-progress and feedback from the work-in-progress, in its turn, influenced the maker's ideas.

Several different effective dynamic task approaches may exist, depending on the task. Weaker students generally have a more static approach. They have a fixed plan in mind, which is often stereotypical and unlikely to change during the process. Observational learning videos should demonstrate contrasting approaches: dynamic and static.

Then we describe possibilities for implementing observational learning in contemporary art education. At present, some art teachers apply modeling strategies. Peer models on video may provide more diverse material and additionally they demonstrate cognitive processes. Contemporary ICT developments provide possibilities for working with observational learning videos, such as having students produce their own process videos instead of written process reports. We believe that observational learning is not only effective for short and structured tasks such as the ones we used in experiment 1 and 2, but also in open and more complex tasks. Observational learning is a process oriented instructional method which seems to fit in well with the process oriented nature of tasks in upper secondary art education.