Learning to write in an online writing center: The effect of learning styles on the writing process

Luuk Van Waes [a,*], Daphne van Weijen [a,b], Mariëlle Leijten [a,c]

[a] University of Antwerp, Prinsstraat 13, 2000 Antwerpen, Belgium
[b] University of Utrecht, Trans 10, Utrecht, The Netherlands
[c] Flanders Research Foundation (FWO), University of Antwerp, Prinsstraat 13, 2000 Antwerpen, Belgium

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ABSTRACT

One of the main advantages of online learning materials is that they can be adapted for students with different learning styles. This article presents a study and a methodology to investigate whether students with different learning styles make use of the potential flexibility of online learning materials, i.c. in the context of an online writing center. The study aims to investigate the effect of learning styles on (a) the students' approach to the writing task (process), and (b) on the letters they write (product). Twenty students each completed a module on writing 'bad news' letters designed for Business Communication courses. Their reading and writing processes were recorded. The letters were also graded to determine their quality. An effect of learning style was found: Active and Reflective writers approached the task differently, but only in the beginning of the process. In this early stage Reflective learners were more likely to focus on the theory section than Active learners. This suggests that writers with different learning styles tackle the learning materials in different ways, often in line with the preferences that characterize their learning styles. However, no effect of learning style on text quality was found.

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1. Introduction

Most e-learning environments allow learners to study individually and independently, at their own pace. However, most of these environments are designed for one specific learning style, e.g., by presenting wizard-like courses, thus disregarding alternative learning modes (for an overview see Palmquist, 2003; 2006). Given the continuous advances in technology and the new insights in (process based) writing education (MacArthur, Graham, & Fitzgerald, 2008), we took the challenge to build an online writing module that explicitly accommodates the preferences of different types of learners. We tried to do this by adopting the principles of problem-solved learning (Evensen & Hmelo, 2000; Glasgow, 1997; Schwartz, Burgett, Blue, Donnelly, & Sloan, 1997) and by combining self-directed learning and guided learning (for a review, see: Barrows, 2009; Loyens, Magda, & Rikers, 2008; Van Merriënboer & Sluijsmans, 2009).

This is in line with Cassidy's plea to create instructional methods which recognize individual differences in learning (Cassidy, 2004). Therefore, the module for this study was constructed in such a way that it was potentially accessible and user-friendly for students with different learning styles. In other words, we wanted to create an object of inquiry, allowing us to investigate the effect of an open and flexible learning environment on the acquisition of new writing skills and competencies.

1.1. Learning styles

Students' learning styles can be determined in many different ways (for a critical review see Coffield, Moseley, Hall, & Ecclestone, 2004). One frequently used method is Kolb's Learning Style Inventory (LSI), which distinguishes between four different learning styles: the accommodator, the assimilator, the converger and the diverger (Kolb, 1984). Learners with these four styles differ in the way in which they

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* Corresponding author.
E-mail addresses: luuk.vanwaes@uantwerpen.be, luuk.vanwaes@ua.ac.be (L. Van Waes), d_vanweijen@hotmail.com (D. van Weijen), marielle.leijten@ua.ac.be (M. Leijten).
URL: https://www.uantwerpen.be/en/staff/luuk-vanwaes, https://www.uantwerpen.be/en/staff/marielle-leijten.

approach new tasks and attempt to learn from them. In order to differentiate between these learning styles, Kolb positions these learning styles on four dimensions: concrete experience, reflective observation, abstract conceptualization or active experimentation (see Fig. 1).

Many studies have applied Kolb's learning styles to a wide range of different learning situations (see Akbulut & Cardak, 2012; Shaw, 2012 for a recent and systematic overview of related studies). Based on the findings of some of these studies (e.g., Chou & Wang, 2000; Coffield et al. 2004; Demirbas & Demirkan, 2007; Erdem, 2009; Ford & Chen, 2001; Leijten, 2007; Terrell, 2002; Wong & Numan, 2011; Zhan, Xu, & Ye, 2011), we can characterize Kolb's four styles as follows. *Accommodators* prefer to learn by doing, which can also be described as trial and error learning. They enjoy taking risks and are open to new experiences. Furthermore, they prefer to make plans and implement them. *Divergers* appear to have a preference for learning through observation. They prefer to observe others and collect information from multiple sources before taking action themselves, and are known to take a creative approach to problem-solving. *Assimilators*, prefer to solve problems through careful reasoning. They prefer to examine relevant theories before taking action and are often good at processing and summarizing large amounts of information. Finally, *Convergers* learn by applying theories to concrete situations. They enjoy experimenting with new ideas and usually attempt to solve problems in a logical and ordered manner. We will discuss the possible implications of these different learning styles for writers' behaviour in the next section.

1.2. Writing processes and task representation

The publication of successive writing models (Flower & Hayes, 1981; Hayes, 1996, 2012) has influenced the teaching of writing to a large extent. These developments in writing research and writing theory lead to a more process oriented approach of writing. An important element in these models is not only the non-linearity of the process, but also the importance of the 'task representation' (Carey & Flower, 1989). As Van Weijen, Van den Bergh, Rijlaarsdam and Sanders (2009) clearly explain: "At the start of the writing process, writers form a representation of the task at hand. Subsequently, this representation changes as they write under influence of various factors, such as topic knowledge, reading the text-produced-so-far, rereading the assignment, or generating new ideas." This aspect of the writing process was already present in the Flower & Hayes model (1981) and is represented as an interaction between the Task environment and the writing sub-processes. In other words, during the writing process the task representation continuously changes, and consequently certain sub-processes will be prioritized and related cognitive activities might become more relevant than others. Therefore, it is important when analysing writing processes to take into account the temporal distribution of the cognitive activities during task execution (Van den Bergh & Rijlaarsdam, 1996). This is especially relevant in the context of a learning activity involving writing in an online environment, where both the task and the learning materials are per definition part of the 'task environment', and are always only a mouse click away. This creates a situation in which the writer constantly monitors his interaction with the task environment and the organisation of sub-processes. The challenge for writing centers is to design materials in such a way that they are open and allow for a constant interaction between the information in the writing center and the text-produced-so far. On the other hand, this open character should not lead to a feeling of disorientation when switching between the learning and the writing environment (cf. Edwards & Hardman, 1989). (When writers return to the learning environment it should be ultimately clear what the location is in the learning module, and they should know which information they have already covered (and not).).

Many studies have addressed the relation between learning styles on the one hand and learning instruction or learning outcomes on the other hand (see, for instance, Cassidy, 2004, a study that provides an overview of theories, models, and measures of learning styles). However, to our knowledge, relatively few studies have investigated the effect of learning styles on writing as such, or more specifically on writing instruction in relation to the organisation of writing processes (i.c. interaction between the writing and the learning environment, as part of the task environment). The most concrete example of such a study was conducted by Sharp, Harb, and Terry (1997). In their article they describe a method for designing and categorizing Writing Across the Curriculum assignments that appeal to each of the four types of learners in Kolb's learning cycle. They illustrate the importance of encouraging a diversity of teaching styles in the context of a writing class for engineering students.

Specific aspects of learning styles have also been studied in related research. For instance, researchers studied the effect of perception of self-efficacy on – the acquisition of – writing skills, based on Bandura's concept of self-efficacy, (e.g., Graham & Harris, 1989; Pajares & Valiante, 1997; Raedts, Rijlaarsdam, Van Waes, & Daems, 2007; Schunk & Swartz, 1993; Shell, 1989; Zimmerman & Bandura, 1994). These studies confirm the hypothesis that beliefs of personal efficacy have a substantial – direct and indirect – impact on the level of writing attainment. Another related perspective, viz. differences between low and high self-monitoring writers, is demonstrated in studies by Galbraith and his colleagues (Galbraith, 1996; Galbraith & Torrance, 2004). Their research demonstrates, for instance, that there is a highly significant difference in the amount of new ideas generated during writing produced by low and high self-monitors. Both groups also differ in the amount of changes in organisation in later phases of the writing process: more high self-monitors than low self-monitors experienced a change in organisation.

In the present study the focus is very explicitly on the effect of learning styles on the organisation of writing processes in a digital leaning and writing environment. A writing center module was especially designed to accommodate different learning styles in an open and flexible way. The aim of the study was to determine whether the implemented concept was really suitable for students with different learning styles. More specifically, we were interested in whether students with different learning styles made use of its potential flexibility. Therefore, the main aim of this study is to investigate the effect of learning styles on (a) the students' approach to the writing task (process), and (b) on the letters they write (product). The research questions that follow from this are:

Is the writing center module we designed for this study suitable for students with different learning styles?

a. To what extent do students' learning styles have an effect on their approach to the writing task? (process)
b. To what extent do students' learning styles have an effect on the quality of the letters produced? (product)

We predict that writers with different learning styles will focus on different sections of the module during different phases of the writing process (Ong & Zhang, 2010, 2012).