Chapter 3
The Medium, the Content, and the Performance: An Overview on Media-Based Learning

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ABSTRACT
This chapter focuses on aspects of the technological and interface dimensions of Badrul Khan’s model, arguing that a correlation exists between the medium of instruction, students’ performance, and the instructional content. Media-based learning is not necessarily more effective, simply because it uses a medium. Several variables exist that influence its success: the medium itself, its properties, production and consumption restraints; the content, and the way it can be presented in the context of a specific medium, and learners’ cognitive styles. All these variables and more have to be taken into consideration, alone and interacting, in order to decide whether and where media-based learning is to be used, and where it might be counterproductive.

INTRODUCTION

Does Media-Based Learning Make Sense?
In the early stages of media-based learning, Clark (1983), implied in a frequently mentioned article, that the instructional media probably does not have a decisive influence on the learning process.

BACKGROUND
The “Language Networks” project within the program “Lifelong Learning“ of the German Federal-Länder-Commission for Educational Planning and Promotion Research was under the author’s direction, and it investigated the advantages and problems of media-based language training. It soon became clear

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during the early stages of the literature review, that a final conception about media-based learning is more complex, including its verifiability, than generally assumed (Giessen, 2004).

Initially—and very broadly—the majority of the studies reviewed confirmed a performance imbalance between traditional and media-based learning. The studies involved were of a quantitative nature, and usually school classes or groups of learners were compared. Here the socio-graphic composition of the groups, and the learning content were kept as identical as possible, so that the only altered variable was related to media-based instruction. In the context of these experimental studies, media-based instruction proved to be, in direct comparison with traditional classroom instruction, on average not worse than the conventional instruction methods—however, in general, not significantly better.

There were observations indicating that individual pupils can do better with media-based learning than with traditional instruction, while on the contrary, other learners had greater difficulties, got along not so well and even produced worse results with media-based learning than with traditional instruction. Accordingly, the experimental studies mentioned above (and being described in the next paragraphs with more detail) might hide a division of the pupils into those who profit from learning with the computer and others who did not get along so well with media-based instruction.

**THE IMPACT OF TIME ON TASK**

Which other variables could play a role in this context? Wallace and Mutooni had already pointed out in 1997 that users of computer-based programs indicated, in contrast to the participants in classroom-based events, the tendency to adhere to individual learning topics until a high level of content understanding had been reached. They also had a more flexible approach to learning than their fellow students, and spread this process throughout the day. It became apparent that media-based learning requires more time than traditional learning. Learners, who were not able, or did not want to devote sufficient time to computer-based learning, did not benefit from media-based instruction. The opposite was the case for those who chose to invest the necessary time.

On the contrary, Pitman, Gosper, and Rich (1999) analyzed the grades and the learning behavior of 348 students. Here it became clear that the students with higher grades had more frequently and regularly requested and used the computer-based additional options than the students with lower grades. Schuman and Sims (1999) confirmed this assumption—they also noticed that the better learners preferred to learn using media-based resources and used this alternative more often, while the less successful learners normally chose traditional forms of learning.

Different time lengths would thus be a criterion that may be important for the success of media-based instruction. Apparently, sufficient periods of time are required to learn efficiently with a computer—and that is clearly more time than with traditional, classroom learning methods. Anyone who devotes, or is willing to devote the necessary time seems to have a greater learning success. This is also confirmed by additional surveys, qualitative studies and evaluations, for instance by Scott, Durnell, Cramton, Gauvin, Steinke and Patterson (1997), who interviewed 123 distance learners for their perceptions in connection with a multinational e-learning project. The respondents stated that longer time lengths and adequate time coordination were of utmost importance. Ward and Newlands (1998) also reached a similar conclusion. The respondents stated that the main advantage achieved was their autonomy when determining the time and pace of their own learning process. This also had the effect that the learners involved invested