Effects of Redundancy and Paraphrasing in University Lessons: Multitasking and Cognitive Load in Written-Spoken PowerPoint Presentation

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ABSTRACT

This paper is about the use of a widespread teaching tool: the slide presentation used in face-to-face, system-paced university lessons. It is produced by lecturers to support students’ comprehension during listening; nevertheless it poses elaboration requests to the audience which should be taken into consideration at the planning stage and in formulating its verbal content. The paper reports the results of a survey conducted with 163 University students who were asked to listen to a lecture accompanied by a PowerPoint presentation, prepared according to the most frequent formats. The written presentation had 3 degrees of concision/redundancy: it had a fully redundant with the oral message, partially redundant (main points in key words), or had a different linguistic form (paraphrase of the message). Furthermore, information in written text and spoken message could have had the same order or they could be scrambled. The results showed that, subjectively, students judged comprehensible every kind of presentation. However, learning tests demonstrated that paraphrasing negatively affected learning, while changes in the order of presentation did not, at least in the synthetic main point – key word presentations. The study suggested that the concise, only partially redundant, presentation is the one which leads to better results, both in the ordered and in the scrambled version.

Keywords: Concision, Learning, Paraphrase, PowerPoint, Redundancy, Scrambling

INTRODUCTION

This research studies the effectiveness of a very common technology, that is, the deck of slides presented during a lecture with a presentation manager such as PowerPoint. PowerPoint (ppt) is one of the most popular tools which allowed the diffusion and development of digital literacy. Its diffusion was contemporary to the diffusion of word processing since the 1980s (Dobson & Willinsky, 2009). Used also by teachers in
schools, ppt e wp became standards – as they are available on almost every pc, they are easy to be used and do not ask for a specific training. However, they are not exempt from criticisms. About ppt, for example, it was said that it fragments thought, makes it impossible to present data with efficacy, forces to use templates which don’t correspond to the text’s conceptual structure. As Tuftee wrote (2003) http://www.wired.com/wired/archive/11.09/ppt2.html the PowerPoint style routinely disrupts, dominates, and trivializes content.

Parallel to these criticisms published on the web, on the same web we may find guidelines, advices and also researches on the conditions which may have a positive or negative effect on comprehension of presented information. Conditions which may regard very obvious deficiencies such as poor readability, due to insufficient size of characters or to the low-contrast text-background. But they may also concern aspects more complex and less intuitive, such as the redundancy between text and message information, the interference between written and spoken information, the request to implement complex search to connect the sentences heard with a specific part of the text presented on the screen.

Some of these aspects are under consideration in this paper, which has the aim to examine the effect of redundancy and concision, of changes in linguistic formulation and order of presentation.

First we will describe a framework which tries to explain the ppt producer’s and receiver’s intentions and objectives. Next we will identify some of the factors that may affect ppt effectiveness and will describe the research conducted.

DOES POWERPOINT PROMOTE LEARNING?

As a starting point, it seems appropriate to analyze the point of view of teachers and learners about the usefulness of PowerPoint. From a recent study of Cantoia et al. (2011) we obtain a description of the intentions and objectives of the teachers. The sample interviewed in their survey – a group of University teachers – states that they use it with the intention of promoting the understanding of their lessons. The interviewed teachers also said to prefer concise formats, partially redundant with the spoken message, as these formats should facilitate the identification of the structure of the lesson. The aim seems to be to give a cognitive guidance, by which, according to Richard Mayer, one wants to make sure that the audience members build appropriate knowledge in their memory (Atkinson, 2004).

With regard to opinions and behaviors of students, it is possible to refer to researches showing that students prefer classes where there is a presentation with ppt compared to transparencies or absence of every presentation tool (Bartsch & Cobern, 2003; Blokszijl & Naeff, 2004). In fact they find classes which use ppt more compelling, clear and organized (Apperson, Laws & Scepansky, 2004). They also prefer when content is organized in a synthetic way with the use of graphs, diagrams and bullet points (Cantoia et al., 2011).

Other studies also show that students learn more when the lecture is supported by a PowerPoint presentation than when it is not (Blokzijl & Andeweg, 2005; Paoletti, Rigutti, & Guglielmelli, 2008), although the results are not conclusive in all researches (Savoy et al., 2009). The conditional success of the ppt can be explained by the fact that it can act as an Advance Organizers (Ausubel, 1962; Mannes & Kintsch, 1987) when it provides a schematic and ordered overview of the content. In these conditions, the presentation may help in the identification of relevant information and of the structure and organization of the lesson (Clarke, 1992; Stull & Mayer, 2007). When it takes other forms, the result does not seem as favorable, instead.

Thus, it appears that there is some degree of agreement between lecturers and learners on the optimal form of presentation: one that shows the structure - organization of the lesson, with short, concise sentences or key points. The effectiveness of this form of presentation during
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