Exploring the effects of arrow-line cueing method on learning in electronic slideshow assisted lecturing

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Electronic slideshow (e.g., PowerPoint) is wildly used for assisting instructions in normal classroom. Since electronic slideshow is often composed of multiple information sources including verbal and visual materials, how to facilitate learners' mental integration of both information sources should be an important issue. However, few studies investigated this issue due to the experimental design concerns. Arrow-line cueing method was proposed to assist learners to integrate verbal and visual information sources of electronic slideshow in this study. This method is applied by connecting parts from the text with the relevant parts in the picture and this method was proved as a useful way to decrease extraneous cognitive load in computer-based learning materials (Liu, Lin, & Paas, 2013). With the assistance of the arrow-line cues, learners can easily find the relevant elements in the text or picture. In this study, a virtual classroom that simulates a normal classroom was taken as the experimental platform to investigate whether the arrow-line cueing method is useful in electronic slideshow assisted lecturing. Sixty-four primary school students were randomly assigned to the cued or un-cued condition. The learning topic was plant leaves characteristics. Participants' cognitive load, comprehension and application performances were measured. The results indicated that the use of arrow line cueing method could benefit for learning. Participants in the cued condition had better learning performance and higher instructional efficiency than participants in the un-cued condition.